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Artificial Neural Nets and Genetic Algorithms - Vera Kurkova - 2013-11-11
The first ICANNGA conference, devoted to biologically inspired computational paradigms, Neural Net works and Genetic Algorithms, was held in Innsbruck, Austria, in 1993. The meeting attracted researchers from all over Europe and further afield, who decided that this particular blend of topics should form a theme for a series of biennial conferences. The second meeting, held in Ales, France, in 1995, carried on the tradition set in Innsbruck of a relaxed and stimulating environment for the exchange of ideas. The series has continued in Norwich, UK, in 1997, and Portoroz, Slovenia, in 1999. The Institute of Computer Science, Czech Academy of Sciences, is pleased to host the fifth conference in Prague. We have chosen the Liechtenstein palace under the Prague Castle as the conference site to enhance the traditionally good atmosphere of the meeting. There is an inspirational genius loci of the historical center of the city, where four hundred years ago a fruitful combination of theoretical and empirical method, through the collaboration of Johannes Kepler and Tycho de Brahe, led to the discovery of the laws of planetary orbits.

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Artificial Neural Nets and Genetic Algorithms - George D. Smith - 2012-12-06
This is the third in a series of conferences devoted primarily to the theory and applications of artificial neural networks and genetic algorithms. The first such event was held in Innsbruck, Austria, in April 1993, the second in Ales, France, in April 1995. We are pleased to host the 1997 event in the mediaval city of Norwich, England, and to carry on the fine tradition set by its predecessors of providing a relaxed and stimulating environment for both established and emerging researchers working in these and other, related fields. This series of conferences is unique in recognising the relation between the two main themes of artificial neural networks and genetic algorithms, each having its origin in a natural process fundamental to life on earth, and each now well established as a paradigm fundamental to continuing technological development through the solution of complex, industrial, commercial and financial problems. This is well illustrated in this volume by the numerous applications of both paradigms to new and challenging problems. The third key theme of the series, therefore, is the integration of both technologies, either through the use of the genetic algorithm to construct the most effective network architecture for the problem in hand, or, more recently, the use of neural networks as approximate fitness functions for a genetic algorithm searching for good solutions in an ‘incomplete’ solution space, i.e. one for which the fitness is not easily established for every possible solution instance.

Artificial Neural Nets and Genetic Algorithms - David W. Pearson - 2012-12-06
Artificial neural networks and genetic algorithms both are areas of research which have their origins in mathematical models constructed in order to gain understanding of important natural processes. By focussing on the process models rather than the processes themselves, significant new computational techniques have evolved which have found application in a large number of diverse fields. This diversity is reflected in the topics which are subjects of the contributions to this volume. There are contributions reporting successful applications of the technology to the solution of industrial/commercial problems. This may well reflect the maturity of the technology, notably in the sense that ‘real’ users of modelling/prediction techniques are prepared to accept neural networks as a valid paradigm. Theoretical issues also receive attention, notably in connection with the radial basis function neural network. Contributions in the field of genetic algorithms reflect the wide range of current applications, including, for example, portfolio selection, filter design, frequency assignment, tuning of nonlinear PID controllers. These techniques are also used extensively for combinatorial optimisation problems.

Artificial Neural Nets and Genetic Algorithms - David W. Pearson - 2012-12-06
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Artificial Neural Nets and Genetic Algorithms - David W. Pearson - 2003-04-08
Artificial neural networks and genetic algorithms both are areas of research which have their origins in mathematical models constructed in order to gain understanding of important natural processes. By focussing on the process models rather than the processes themselves, significant new computational techniques have evolved which have found application in a large number of diverse fields. This diversity is reflected in the topics which are subjects of the contributions to this volume. There are contributions reporting successful applications of the technology to the solution of industrial/commercial problems. This may well reflect the maturity of the technology, notably in the sense that ‘real’ users of modelling/prediction techniques are prepared to accept neural networks as a valid paradigm. Theoretical issues also receive attention, notably in connection with the radial basis function neural network. Contributions in the field of genetic algorithms reflect the wide range of current applications, including, for example, portfolio selection, filter design, frequency assignment, tuning of nonlinear PID controllers. These techniques are also used extensively for combinatorial optimisation problems.
Artificial Neural Nets and Genetic Algorithms - Andrej Dobnikar - 2012-12-06

From the contents: Neural networks - theory and applications: NNs (= neural networks) classifier on continuous data domains - quantum associative memory - a new class of neuron-like discrete filters to image processing - modular NNs for improving generalisation properties - presynaptic inhibition modelling for image processing application - NN recognition system for a curvature primal sketch - NN based nonlinear temporal-spatial noise rejection system - relaxation rate for improving Hopfield network - Oja's NN and influence of the learning gain on its dynamics Genetic algorithms - theory and applications: transposition: a biological-inspired mechanism to use with GAs (= genetic algorithms) - GA for decision tree induction - optimising decision classifications using GAs - scheduling tasks with intertask communication onto multiprocessors by GAs - design of robust networks with GA - offsetting the demerits of one paradigm by the merits of another. This book presents specific projects where the theoretical bases of each technique are expertly (but simply) described. These are followed by application chapters in which special emphasis will be given to the advantages of the application of GA or ANN to that specific problem, compared to classical techniques, and to the risks connected with its misuse. This book is of use to all those who are using or are interested in GA and ANN. Beginners can focus their attentions on the tutorials, whilst the most advanced readers will be more interested in looking at the applications of the techniques. It is also suitable as a reference book for students. Subject matter is steadily increasing in importance Comparison of Genetic Algorithms (GA) and Artificial Neural Networks (ANN) with the classical techniques Suitable for both beginners and advanced researchers

Artificial Neural Nets and Genetic Algorithms - - 1995

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Artificial Neural Nets and Genetic Algorithms - George D Smith - 1998-06-22

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Fusion of Neural Networks, Fuzzy Systems and Genetic Algorithms - Lakhmi C. Jain - 2020-01-29

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

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Artificial Neural Nets and Genetic Algorithms - Rudolf F. Albrecht - 2012-02-17
Artificial neural networks and genetic algorithms both are areas of research which have their origins in mathematical models constructed in order to gain understanding of important natural processes. By focussing on the process models rather than the processes themselves, significant new computational techniques have evolved which have found application in a large number of diverse fields. This diversity is reflected in the topics which are the subjects of contributions to this volume. There are contributions reporting theoretical developments in the design of neural networks, and in the management of their learning. In a number of contributions, applications to speech recognition tasks, control of industrial processes as well as to credit scoring, and so on, are reflected. Regarding genetic algorithms, several methodological papers consider how genetic algorithms can be improved using an experimental approach, as well as by hybridizing with other useful techniques such as tabu search. The closely related area of classifier systems also receives a significant amount of coverage, aiming at better ways for their implementation. Further, while there are many contributions which explore ways in which genetic algorithms can be applied to real problems, nearly all involve some understanding of the context in order to apply the genetic algorithm paradigm more successfully. That this can indeed be done is evidenced by the range of applications covered in this volume.

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NEURAL NETWORKS, FUZZY LOGIC AND GENETIC ALGORITHM - S. RAJASEKARAN - 2003-01-01
This book provides comprehensive introduction to a consortium of technologies underlying soft computing, an evolving branch of computational intelligence. The constituent technologies discussed comprise neural networks, fuzzy logic, genetic algorithms, and a number of hybrid systems which include classes such as neuro-fuzzy, fuzzy-genetic, and neuro-genetic systems. The hybridization of the technologies is demonstrated on architectures such as Fuzzy-Back-propagation Networks (NN-FL), Simplified Fuzzy ARTMAP (NN-FL), and Fuzzy Associative Memories. The book also gives an exhaustive discussion of FL-GA hybridization. Every architecture has been discussed in detail through illustrative examples and applications. The algorithms have been presented in pseudo-code with a step-by-step illustration of the same in problems. The applications, demonstrating the potential of the architectures, have been chosen from diverse disciplines of science and engineering. This book with a wealth of information that is clearly presented and illustrated by many examples and applications is designed for use as a text for courses in soft computing at both the senior undergraduate and first-year postgraduate engineering levels. It should also be of interest to researchers and technologists desirous of applying soft computing technologies to their respective fields of work.

Time and Accuracy Tradeoff Using Artificial Neural Nets and Genetic Algorithms - Christopher N. Tan - 2000
Time and Accuracy Tradeoff Using Artificial Neural Nets and Genetic Algorithms - Christopher N. Tan - 2000
Practical Computer Vision Applications Using Deep Learning with CNNs - Ahmed Fawzy Gad - 2018-12-05
Deploy deep learning applications into production across multiple platforms. You will work on computer vision applications that use the convolutional neural network (CNN) deep learning model and Python. This book starts by explaining the traditional machine-learning pipeline, where you will analyze an image dataset. Along the way you will cover artificial neural networks (ANNs), building one from scratch in Python, before optimizing it using genetic algorithms. For automating the process, the book highlights the limitations of traditional hand-crafted features for computer vision and why the CNN deep-learning model is the state-of-art solution. CNNs are discussed from scratch to demonstrate how they are different and more efficient than the fully connected ANN (FCNN). You will implement a CNN in Python to give you a full understanding of the model. After consolidating the basics, you will use TensorFlow to build a practical image-recognition model that you will deploy to a web server using Flask, making it accessible over the Internet. Using Kivy and NumPy, you will create cross-platform data science applications with low overheads. This book will help you apply deep learning and computer vision concepts from scratch, step-by-step from conception to production. What You Will Learn Understand how ANNs and CNNs work Create computer vision applications and CNNs from scratch using Python Follow a deep learning project from conception to production using TensorFlow Use NumPy with Kivy to build cross-platform data science applications Who This Book Is For Data scientists, machine learning and deep learning engineers, software developers.

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and neuro-evolutionary systems. The hybridization of the technologies is demonstrated on architectures such as developers.

**Artificial Neural Nets and Genetic Algorithms** - 1995

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This volume presents the proceedings of the 9th Online World Conference on Soft Computing in Industrial Applications, held on the World Wide Web in 2004. It includes lectures, original papers and tutorials presented during the conference. The book brings together outstanding research and developments in soft computing, including evolutionary computation, fuzzy logic, neural networks, and their fusion, and its applications in science and technology.


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**Machine Learning** - Hojjat Adeli - 1995

This is the only book to apply neural nets, genetic algorithms, and fuzzy set theory to the fast growing field of machine learning. Placing particular emphasis on neural networks, it explores how to integrate them with other technologies to improve their performance. Examples are included for each system discussed.

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**NEURAL NETWORKS, FUZZY SYSTEMS AND EVOLUTIONARY ALGORITHMS : SYNTHESIS AND APPLICATIONS** - S. RAJASEKARAN - 2017-05-01

The second edition of this book provides a comprehensive introduction to a consortium of technologies underlying soft computing, an evolving branch of computational intelligence, which in recent years, has turned synonymous to it. The constituent technologies discussed comprise neural network (NN), fuzzy system (FS), evolutionary algorithm (EA), and a number of hybrid systems, which include classes such as neuro-fuzzy, evolutionary-fuzzy, and neuro-evolutionary systems. The hybridization of the technologies is demonstrated on architectures such as fuzzy backpropagation network (NN-FS hybrid), genetic algorithm-based backpropagation network (NN-EA hybrid), simplified fuzzy ARTMAP (NN-FS hybrid), fuzzy associative memory (NN-FS hybrid), fuzzy logic controlled genetic algorithm (EA-FS hybrid) and evolutionary extreme learning machine (NN-EA hybrid) Every architecture has been discussed in detail through illustrative examples and applications. The algorithms have been presented in pseudo-code with a step-by-step illustration of the same in problems. The applications, demonstrative of the potential of the architectures, have been chosen from diverse disciplines of science and engineering. This book, with a wealth of information that is clearly presented and illustrated by many examples and applications, is designed for use as a text for the courses in soft computing at both the senior undergraduate and first-year postgraduate levels of computer science and engineering. It should also be of interest to researchers and technologists desirous of applying soft computing technologies to their respective fields of work.

**Artificial Neural Networks and Genetic Algorithms** - Niko Culevski - 1996

**Artificial Neural Nets and Genetic Algorithms** - David W. Pearson - 2011-06-28

The 2003 edition of ICANNGA marks a milestone in this conference series, because it is the tenth year of its existence. The series began in 1993 with the inaugural conference at Innsbruck in Austria. At that first conference, the organisers decided to organise a similar scientific meeting every two years. As a result, conferences were organised at Ales in France (1995), Norwich in England (1997), Portoroz in Slovenia (1999) and Prague in the Czech Republic (2001). It is a great honour that the conference is taking place in France for the second time. Each edition of ICANNGA has been special and had its own character. Not only that, participants have been able to sample the life and local culture in five different European countries. Originally limited to neural networks and genetic algorithms the conference has broadened its outlook over the past ten years and now includes papers on soft computing and artificial intelligence in general. This is one of the reasons why the reader will find papers on fuzzy logic and various other topics not directly related to neural networks or genetic algorithms included in these proceedings. We have, however, kept the same name, "International Conference on Artificial Neural Networks and Genetic Algorithms". All of the papers were sorted into one of six principal categories: neural network theory, neural network applications, genetic algorithm and evolutionary computation theory, genetic algorithm and evolutionary computation applications, fuzzy and soft computing theory, fuzzy and soft computing applications.

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**On the Application of Artificial Neural Networks and Genetic Algorithms in Hydro-Meteorological Modelling** - Dweepika Achela Kumarihamy Fernando - 2017-01-27

This dissertation, "On the Application of Artificial Neural Networks and Genetic Algorithms in Hydro-meteorological Modelling" by Dweepika Achela Kumarihamy, Fernando, was obtained from The University of Hong Kong (Pokfulam, Hong Kong) and is being sold pursuant to Creative Commons Attribution 3.0 Hong Kong
fuzzy knowledge discovery, time series prediction, fuzzy games and pattern recognition. This effective soft computing system is able to perform both linguistic-word-level fuzzy reasoning and numerical-data-level information processing. The book also proposes various novel soft computing techniques.

**Forecasting with Artificial Neural Networks and Genetic Algorithms** - Tsun-Liang Lu - 1998

**Evolutionary Approach to Machine Learning and Deep Neural Networks** - Hitoshi Iba - 2018-06-15

This book provides theoretical and practical knowledge about a methodology for evolutionary algorithm-based search strategy with the integration of several machine learning and deep learning techniques. These include convolutional neural networks, Gröbner bases, relevance vector machines, transfer learning, bagging and boosting methods, clustering techniques (affinity propagation), and belief networks, among others. The development of such tools contributes to better optimizing methodologies. Beginning with the essentials of evolutionary algorithms and covering interdisciplinary research topics, the contents of this book are valuable for different classes of readers: novice, intermediate, and also expert readers from related fields. Following the chapters on introduction and basic methods, Chapter 3 details a new research direction, i.e., neuro-evolution, an evolutionary method for the generation of deep neural networks, and also describes how evolutionary methods are extended in combination with machine learning techniques. Chapter 4 includes novel methods such as particle swarm optimization based on affinity propagation (PSOAP), and transfer learning for differential evolution (TRADE), another machine learning approach for extending differential evolution. The last chapter is dedicated to the state of the art in gene regulatory network (GRN) research as one of the most interesting and active research fields. The author describes an evolving reaction network, which expands the neuro-evolution methodology to produce a type of genetic network suitable for biochemical systems and has succeeded in designing genetic circuits in synthetic biology. The author also presents real-world GRN application to several artificial intelligent tasks, proposing a framework of motion generation by GRNs (MONGERN), which evolves GRNs to operate a real humanoid robot.

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**Automatic Generation of Neural Network Architecture Using Evolutionary Computation** - E Vonk - 1997-10-31

This book describes the application of evolutionary computation in the automatic generation of a neural network architecture. The author presents a powerful hybrid intelligent system based on fuzzy logic, neural networks, genetic algorithms and related intelligent techniques. The new compensatory genetic fuzzy neural networks have been widely used in fuzzy control, nonlinear system modeling, compression of a fuzzy rule base, expansion of a sparse fuzzy rule base, and related intelligent techniques. The new compensatory genetic fuzzy neural networks have been widely used in fuzzy control, nonlinear system modeling, compression of a fuzzy rule base, expansion of a sparse fuzzy rule base, and related intelligent techniques.
undergraduates. Numerical methods were first taught at the graduate level but are now taught at the practice to use trial and error to find a suitable neural network architecture for a given problem. The process of trial and error is not an automatic network generation but may not generate an optimal network. The use of evolutionary computation is a step towards automation in neural network architecture generation. An overview of the field of evolutionary computation is presented, together with the biological background from which the field was inspired. The most commonly used approaches to a mathematical foundation of the field of genetic algorithms are given, as well as an overview of the hybridization between evolutionary computation and neural networks. Experiments on the implementation of automatic neural network generation using genetic programming and one using genetic algorithms are described, and the efficacy of genetic algorithms as a learning algorithm for a feedforward neural network is also investigated. Contents:Artificial Neural NetworksEvolutionary ComputationThe Biological BackgroundMathematical Foundations of Genetic AlgorithmsImplementing GasHybridisation of Evolutionary Computation and Neural NetworksUsing Genetic Programming to Generate Neural NetworksUsing a GA to Optimise the Weights of a Neural NetworkUsing a GA with Grammar Encoding to Generate Neural NetworksAutomatic Neural Network Generation;Future Directions Readership: Scientists, engineers, and researchers interested in artificial intelligence and systems & knowledge engineering. Keywords:Artificial Neural Networks;Neural NetworksArchitecture;Automatic Neural Networks Generation;Learning;Genetic Algorithms;Evolutionary Algorithms;Hybridization

**Automatic Generation of Neural Network Architecture Using Evolutionary Computation** - E Vonk - 1997-10-31

This book describes the application of evolutionary computation in the automatic generation of a neural network architecture. The architecture has a significant influence on the performance of the neural network. It is the usual practice to use trial and error to find a suitable neural network architecture for a given problem. The process of trial and error is not an automatic network generation but may not generate an optimal network. The use of evolutionary computation is a step towards automation in neural network architecture generation. An overview of the field of evolutionary computation is presented, together with the biological background from which the field was inspired. The most commonly used approaches to a mathematical foundation of the field of genetic algorithms are given, as well as an overview of the hybridization between evolutionary computation and neural networks. Experiments on the implementation of automatic neural network generation using genetic programming and one using genetic algorithms are described, and the efficacy of genetic algorithms as a learning algorithm for a feedforward neural network is also investigated. Contents:Artificial Neural NetworksEvolutionary ComputationThe Biological BackgroundMathematical Foundations of Genetic AlgorithmsImplementing GasHybridisation of Evolutionary Computation and Neural NetworksUsing Genetic Programming to Generate Neural NetworksUsing a GA to Optimise the Weights of a Neural NetworkUsing a GA with Grammar Encoding to Generate Neural NetworksAutomatic Neural Network Generation;Future Directions Readership: Scientists, engineers, and researchers interested in artificial intelligence and systems & knowledge engineering. Keywords:Artificial Neural Networks;Neural NetworksArchitecture;Automatic Neural Networks Generation;Learning;Genetic Algorithms;Evolutionary Algorithms;Hybridization

**Soft Computing in Water Resources Engineering** - G. Tayfur - 2014-11-02

Engineers have attempted to solve water resources engineering problems with the help of empirical, regression-based and numerical models. Empirical models are not universal, nor are regression-based models. The numerical models are, on the other hand, physics-based but require substantial data measurement and parameter estimation. Hence, there is a need to employ models that are robust, user-friendly, and practical and that do not have the shortcomings of the existing models. Artificial intelligence methods meet this need. Soft Computing in Water Resources Engineering introduces the basics of artificial neural networks (ANN), fuzzy logic (FL) and genetic algorithms (GA). It gives details on the feed forward back propagation algorithm and also introduces neuro-fuzzy modelling to readers. Artificial intelligence method applications covered in the book include predicting and forecasting floods, predicting suspended sediment, predicting event-based flow hydrographs and neuro-fuzzy modelling to readers. Artificial intelligence method applications covered in the book include predicting and forecasting floods, predicting suspended sediment, predicting event-based flow hydrographs and predicting sediment transport in natural channels. The book also provides an analysis comparing the artificial intelligence models and contemporary non-artificial intelligence methods (empirical, numerical, regression, etc.). The book includes a self-contained introduction to this new exciting field of computational intelligence. This second edition has been revised and extended with five new chapters.

**Gene Expression Programming** - Candida Ferreira - 2006-08-29

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This book, written by leading researchers, presents methods of combining neural nets to improve their performance. The book provides an analysis comparing the artificial intelligence models and contemporary non-artificial intelligence methods (empirical, numerical, regression, etc.). The ANN, FL, and GA are fairly new methods in water resources engineering. The first publications appeared in the early 1990s and quite a few studies followed in the early 2000s. Although these methods are currently widely known in journal publications, they are still very new for many scientific readers and they are totally new for students, especially undergraduate level. There are already a few graduate courses developed on AI methods in engineering and included in the graduate curriculum of some universities. It is expected that these courses, too, will soon be taught at the undergraduate level.

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Artificial neural networks, genetic algorithms and the ant colony optimization algorithm have become a highly effective tool for solving hard optimization problems. As their popularity has increased, applications of these algorithms have grown in more than equal measure. While many of the books available on these subjects only provide a cursory discussion of theory, the present book gives special emphasis to the theoretical background that is behind these algorithms and their applications. Moreover, this book introduces a novel real time control algorithm, that uses genetic algorithm and ant colony optimization algorithms for optimizing PID controller parameters. In general, the present book represents a solid survey on artificial neural networks, genetic algorithms and the ant colony optimization algorithm and introduces novel practical elements related to the application of these methods to process system control.


This book explores the intuitive appeal of neural networks and the genetic algorithm in finance. It demonstrates how neural networks used in combination with evolutionary computation outperform classical econometric methods for accuracy in forecasting, classification and dimensionality reduction. McNeils utilizes a variety of examples, from forecasting automobile production and corporate bond spread, to inflation and deflation processes in Hong Kong and Japan, to credit card default in Germany to bank failures in Texas, to cap-floor volatilities in New York and Hong Kong. * Offers a balanced, critical review of the neural network methods and genetic algorithms used in finance * Includes numerous examples and applications * Numerical illustrations use MATLAB code and the book is accompanied by a website

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On Using Artificial Neural Networks and Genetic Algorithms to Optimize Performance of an Electronic Nose - Bahram Ghaflazadeh Kermani - 1996

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As book review editor of the IEEE Transactions on Neural Networks, Mohamad Hassoun has had the opportunity to assess the multitude of books on artificial neural networks that have appeared in recent years. Now, in Fundamentals of Artificial Neural Networks, he provides the first systematic account of artificial neural network paradigms by identifying clearly the fundamental concepts and major methodologies underlying most of the current theory and practice employed by neural network researchers. Such a systematic and unified treatment, although lacking in most recent texts on neural networks, makes the subject more accessible to students and practitioners. Here, important results are integrated in order to more fully explain a wide range of existing empirical observations and commonly used heuristics. There are numerous illustrative examples, over 200 end-of-chapter analytical and computer-based problems that will aid in the development of neural network analysis and design skills, and a bibliography of nearly 700 references. Proceeding in a clear and logical fashion, the first two chapters present the basic building blocks and concepts of artificial neural networks and analyze the computational capabilities of the basic network architectures involved. Supervised, reinforcement, and unsupervised learning rules in simple nets are brought together in a common framework in chapter three. The convergence and solution properties of these learning rules are then treated mathematically in chapter four, using the "average learning equation" analysis approach. This organization of material makes it natural to switch into topics in chapter five. Chapter six covers most of the major neural network paradigms, while associative memories and energy minimizing nets are given detailed coverage in the next chapter. The final chapter takes up Boltzmann machines and Boltzmann learning along with other global search/optimization algorithms such as stochastic gradient search, simulated annealing, and genetic algorithms.

Fundamentals of Artificial Neural Networks - Mohamad H. Hassoun - 1995

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Artificial Neural Networks — ICANN 2002

Problems. Neural Networks utilizing back propagation based learning have promisingly showed results to a vast methods, which are used in a wide range of applications. They are capable to finding solution to hard NP-based solution, but they are able to find very good solutions for a wide range of problems. The use of both, genetic optimal solution to a problem. Since Gas is heuristic procedures, they are not guaranteed to find the optimal application. The algorithm is so versatile that it can be used in any field. The objective of the GA is to find an optimal solution to a problem. Since Gas is heuristic procedures, they are not guaranteed to find the optimal solution, but they are able to find very good solutions for a wide range of problems. The use of both, genetic algorithms and artificial neural networks, was originally motivated by the astonishing success of these concepts in there biological counterparts. Despite their totally deferent approaches, both can merely be seen as optimization methods, which are used in a wide range of applications. They are capable to finding solution to hard NP-based Problems. Neural Networks utilizing back propagation based learning have promisingly showed results to a vast variety of function and problems. TSP is one such classical problem for theoretical computation.

Optimization of Artificial Neural Network Parameter Using Genetic Algorithm

Genetic Algorithms are one of the most powerful techniques in optimization and search problems. The Objective was, to understand this powerful technique and to explain it in better way so as to expand its field of application. The algorithm is so versatile that it can be used in any field. The objective of the GA is to find an optimal solution to a problem. Since GAs is heuristic procedures, they are not guaranteed to find the optimal solution, but they are able to find very good solutions for a wide range of problems. The use of both, genetic algorithms and artificial neural networks, was originally motivated by the astonishing success of these concepts in there biological counterparts. Despite their totally deferent approaches, both can merely be seen as optimization methods, which are used in a wide range of applications. They are capable to finding solution to hard NP-based Problems. Neural Networks utilizing back propagation based learning have promisingly showed results to a vast variety of function and problems. TSP is one such classical problem for theoretical computation.

Evolutionary Algorithms and Neural Networks

This book introduces readers to the fundamentals of artificial neural networks, with a special emphasis on evolutionary algorithms. At first, the book offers a literature review of several well-regarded evolutionary algorithms, including particle swarm and ant colony optimization, genetic algorithms and biogeography-based optimization. It then proposes evolutionary version of several types of neural networks such as feed forward neural networks, radial basis function networks, as well as recurrent neural networks and multi-layer perceptron. Most of the challenges that have to be addressed when training artificial neural networks using evolutionary algorithms are discussed in detail. The book also demonstrates the application of the proposed algorithms for several purposes such as classification, clustering, approximation, and prediction problems. It provides a tutorial on how to design, adapt, and evaluate artificial neural networks as well, and includes source codes for most of the proposed techniques as supplementary materials.