Applications of Neural Networks

This monograph provides researchers with an understanding of the potential of artificial neural networks for solving civil engineering related problems, and guidance on how to develop successful implementations for a broad range of problems. Fundamental issues in the selection, development, and use of neural networks, as well as example applications to each of the various disciplines in civil engineering are presented. An introduction to neural networks is provided, along with a classification of the various forms of neural networking systems available (architectures, modes of operation, and methods of development).

Machine Learning

Incremental Training and Growth of Artificial Neural Networks

Deep Learning - 2 BOOK BUNDLE!! Deep Learning with Keras This book will introduce you to various supervised and unsupervised deep learning algorithms like the multilayer perceptron, linear regression and other more advanced deep convolutional and recurrent neural networks. You will also learn about image processing, handwritten recognition, object recognition and much more. Furthermore, you will get familiar with recurrent neural networks like LSTM and GAN as you explore processing sequence data like time series, text, and audio. The book will definitely be your best companion on this great deep learning journey with Keras introducing you to the basics you need to know in order to take next steps and learn more advanced deep neural networks. Here Is a Preview of What You'll Learn Here: The difference between deep learning and machine learning Deep neural networks Convolutional neural networks Building deep learning models with Keras Multi-layer perceptron network models Activation functions Handwritten recognition using MNIST Solving multi-class classification problems Recurrent neural networks and sequence classification And much more Convolutional Neural Networks in Python

This book
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covers the basics behind Convolutional Neural Networks by introducing you to this complex world of deep learning and artificial neural networks in a simple and easy to understand way. It is perfect for any beginner out there looking forward to learning more about this machine learning field. This book is all about how to use convolutional neural networks for various image, object and other common classification problems in Python. Here, we also take a deeper look into various Keras layer used for building CNNs we take a look at different activation functions and much more, which will eventually lead you to creating highly accurate models able of performing great task results on various image classification, object classification and other problems. Therefore, at the end of the book, you will have a better insight into this world, thus you will be more than prepared to deal with more complex and challenging tasks on your own. Here Is a Preview of What You’ll Learn In This Book! Convolutional neural networks structure How convolutional neural networks actually work Convolutional neural networks applications The importance of convolution operator Different convolutional neural networks layers and their importance Arrangement of spatial parameters How and when to use stride and zero-padding Method of parameter sharing Matrix multiplication and its importance Pooling and dense layers Introducing non-linearity relu activation function How to train your convolutional neural network models using backpropagation How and why to apply dropout CNN model training process How to build a convolutional neural network Generating predictions and calculating loss functions How to train and evaluate your MNIST classifier How to build a simple image classification CNN And much, much more! Get this book bundle NOW and SAVE money!

Parallel Optimization Algorithms for Training Artificial Neural Networks

The two-volume set LNCS 7552 + 7553 constitutes the proceedings of the 22nd International Conference on Artificial Neural Networks, ICANN 2012, held in Lausanne, Switzerland, in September 2012. The 162 papers included in the proceedings were carefully reviewed and selected from 247 submissions. They are organized in topical sections named: theoretical neural computation; information and optimization; from neurons to neuromorphism; spiking dynamics; from single neurons to networks; complex firing patterns; movement and motion; from sensation to perception; object and face recognition; reinforcement learning; bayesian and echo state networks; recurrent neural networks and reservoir computing; coding architectures; interacting with the brain; swarm intelligence and decision-making; multilayer perceptrons and kernel networks; training and learning; inference and recognition; support vector machines; self-organizing maps and clustering; clustering, mining and exploratory analysis; bioinformatics; and time series and forecasting.

Brittle Matrix Composites

Applications of Neural Networks gives a detailed description of 13 practical applications of neural networks, selected because the tasks performed by the neural networks are real and significant. The contributions are from leading researchers in neural networks and, as a whole, provide a balanced coverage across a range of application areas and algorithms. The book is divided into three sections. Section A is an introduction to neural networks for nonspecialists. Section B looks at examples of applications using ‘Supervised Training’. Section C presents a number of examples of ‘Unsupervised Training’. For neural network enthusiasts and interested, open-minded sceptics. The book leads the latter through the fundamentals into a convincing and varied series of neural success stories -- described carefully and honestly without over-claiming. Applications of Neural Networks is essential reading for all researchers and designers who are tasked with using neural networks in real life applications.

Training and Source Code Generation for Artificial Neural Networks

Learn how to implement and build a neural network with this non-technical, project-based book as your guide. As you work through the chapters, you’ll build an electronics project, providing a hands-on experience in training a network. There are no prerequisites here and you won’t see a single line of computer code in this book. Instead, it takes a hardware approach using very simple electronic components. You’ll start off with an interesting non-technical introduction to neural networks, and then construct an electronics project. The project isn’t complicated, but it illustrates how back propagation can be used to adjust connection strengths or “weights” and train a network. By the end of this book, you’ll be able to take what you’ve learned and apply it to your own projects. If you like to tinker around with components and build circuits on a breadboard, Neural Networks for Electronics Hobbyists is the book for
you. What You'll Learn Gain a practical introduction to neural networks Review techniques for training networks with electrical hardware and supervised learning Understand how parallel processing differs from standard sequential programming Who This Book Is For Anyone interested in neural networks, from electronic hobbyists looking for an interesting project to build, to a layperson with no experience. Programmers familiar with neural networks but have only implemented them using computer code will also benefit from this book.

Artificial Neural Networks

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 sadly 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 learning multilayer nets using backprop and its variants, described 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

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.

Principles of Artificial Neural Networks

Artificial neural networks (ANN) are widely used in diverse fields of science and industry. Though there have been numerous techniques used for their implementations, the choice of a specific implementation is subjected to different factors including cost, accuracy, processing speed and overall performance. Featured with synaptic plasticity, the process of training is concerned with adjusting the individual weights between each of the individual ANN neurons until we can achieve close to the desired output. This book introduces the common trajectory-driven and evolutionary-based ANN training algorithms.

Artificial Neural Networks

What is machine learning? How machine learning works? Should I use a machine learning model or another approach to solve my problem? How do I implement machine learning to my problem? What are the machine learning methods I can use for my problem? How do I know my machine learning model is efficient? Are you wondering all these questions and hesitate on how to start with machine learning? The
object of this book is to answer all of these questions. This book will give an initiation to machine learning methods. In fact, this book will give the very fundamental concepts of machine learning methods with no pre-requisite skills. Machine learning include is a large domain of research and have different branches. This book will teach the concepts of machine learning in general and also how to use artificial neural networks. By acquiring the skills presented in this book, we will be able to decide if machine learning is suited to solve your problem. You will also be able to make a judgement on the best way to implement a machine learning model to solve the problem you have in hand. By reading this book you will learn: - The general concept of machine learning - When to use and when to avoid machine learning - The 4 main types of machine learning - When to use each type of machine learning - The general concept of artificial neural networks - Activation function in artificial neural network and to choose an activation function within an artificial neural network - The 5 main types of artificial neural network - The best function to be used to train artificial neural networks. - the 2 main concepts to know in the training process of the artificial neural network - the main variants and algorithms for the formation of an artificial neural network and a machine learning model in general. Even you don't have any mathematical background or a statistical skill, this book will help you develop a sound understanding of machine learning methods and artificial neural networks.

Neural Networks and Deep Learning

This book gathers the most current research from across the globe in the study of artificial neural networks. Topics discussed include artificial neural networks in environmental sciences and chemical engineering; application of artificial neural networks in the development of pharmaceutilcal microemulsions; massive-training artificial neural networks for supervised enhancement/suppression of lesions/patterns in medical images; evidences of new biophysical properties of microtubules; neural network applications in modern induction machine control systems and wavelet neural networks.

Training of Artificial Neural Networks Via Interior Point Algorithms

This book covers both classical and modern models in deep learning. The primary focus is on the theory and algorithms of deep learning. The theory and algorithms of neural networks are particularly important for understanding important concepts, so that one can understand the important design concepts of neural architectures in different applications. Why do neural networks work? When do they work better than off-the-shelf machine-learning models? When is depth useful? Why is training neural networks so hard? What are the pitfalls? The book is also rich in discussing different applications in order to give the practitioner a flavor of how neural architectures are designed for different types of problems. Applications associated with many different areas like recommender systems, machine translation, image captioning, image classification, reinforcement-learning based gaming, and text analytics are covered. The chapters of this book span three categories: The basics of neural networks: Many traditional machine learning models can be understood as special cases of neural networks. An emphasis is placed in the first two chapters on understanding the relationship between traditional machine learning and neural networks. Support vector machines, linear/logistic regression, singular value decomposition, matrix factorization, and recommender systems are shown to be special cases of neural networks. These methods are studied together with recent feature engineering methods like word2vec. Fundamentals of neural networks: A detailed discussion of training and regularization is provided in Chapters 3 and 4. Chapters 5 and 6 present radial-basis function (RBF) networks and restricted Boltzmann machines. Advanced topics in neural networks: Chapters 7 and 8 discuss recurrent neural networks and convolutional neural networks. Several advanced topics like deep reinforcement learning, neural Turing machines, Kohonen self-organizing maps, and generative adversarial networks are introduced in Chapters 9 and 10. The book is written for graduate students, researchers, and practitioners. Numerous exercises are available along with a solution manual to aid in classroom teaching. Where possible, an application-centric view is highlighted in order to provide an understanding of the practical uses of each class of techniques.

Self-training Artificial Neural Networks for Risk Reduction in Nuclear Power Operations

Artificial neural networks are most suitable for solving problems that are complex, ill-defined, highly nonlinear, of many and different variables, and/or stochastic. Such problems are abundant in medicine, in
finance, in security and beyond. This volume covers the basic theory and architecture of the major artificial neural networks. Uniquely, it presents 18 complete case studies of applications of neural networks in various fields, ranging from cell-shape classification to micro-trading in finance and to constellation recognition OCo all with their respective source codes. These case studies demonstrate to the readers in detail how such case studies are designed and executed and how their specific results are obtained. The book is written for a one-semester graduate or senior-level undergraduate course on artificial neural networks. It is also intended to be a self-study and a reference text for scientists, engineers and for researchers in medicine, finance and data mining."

Artificial Neural Networks

Do want to learn how machine learning and neural networks work quickly and simply? Do you want to know how to build a machine learning model and you have no programming skill? Do you want to get started with learning data science? This bundle is going to guide you to the basics and the principles behind machine learning. Machine learning is an active research domain and includes several different approaches. This bundle is going to help you understand the different approaches of machine learning and neural networks. It will guide you through the steps you need to build a machine learning model. Machine learning implies programming. This bundle will teach you Python programming. This bundle does not require any pre-programming skills. It will help to get you started in Python programming, as well as how to use Python libraries to analyze data and apply machine learning. Overall, this bundle is a go-to guide for getting started in machine learning modeling using Python programming. Once you get through the bundle, you will be able to develop your own machine learning models using Python. Through this bundle, you will learn: Principles of machine learning Types of machine learning: supervised, unsupervised, semi-supervised, and reinforcement learning Advantages of each type of machine learning Principle and types of neural networks Steps to develop and fit artificial neural network model Getting started and installing Python Tools and platforms for Python programming How to use pandas, NumPy and matplotlib Python libraries How to develop a simple linear and logistic machine learning model How to develop and train a multi-layer artificial neural network two ways: from scratch and using the Python libraries When to use each type of machine learning The general concept of artificial neural networks Activation function in artificial neural network and to choose an activation function within an artificial neural network The 5 main types of artificial neural network The best function to be used to train artificial neural networks. the 2 main concepts to know in the training process of the artificial neural network the main variants and algorithms for the formation of an artificial neural network and a machine learning model in general. Even if you don't have any background in machine learning and Python programming, this book will give you the tools to develop machine learning models. Would you like to know more? Scroll to the top of the page and select the BUY NOW button!!

Artificial Neural Networks

A Cooperative Training Model for Supervised Learning in Artificial Neural Networks

This book is an exploration of an artificial neural network. It has been created to suit even the complete beginners to artificial neural networks. The first part of the book is an overview of artificial neural networks so as to help the reader understand what they are. You will also learn the relationship between the neurons which make up the human brain and the artificial neurons. Artificial neural networks embrace the concept of learning which is common in human beings. This book guides you to understand how learning takes place in artificial neural networks. The back-propagation algorithm, which is used for training artificial neural networks, is discussed. The book also guides you through the architecture of an artificial neural network. The various types of artificial neural networks based on their architecture are also discussed. The book guides you on the necessary steps for one to build a neural network. The perception, which is a type of an artificial neural network, is explored, and you will explore how to implement one programatically. The following topics are discussed in this book: -What is a Neural Network? -Learning in Neural Networks -The Architecture of Neural Networks -Building Neural Networks -The Perceptron
Ultra-high performance concrete (UHPC) results from the mixture of several constituents giving rise to a highly complex material in hardened state. The higher number of constituents in relation to current concrete, together with a higher number of possible combinations and relative proportioning, makes the behavior of this type of concrete more difficult to predict. Until now, most of the proposed mixture design methods are based on a trial and error procedure, which is expensive and work intensive. Moreover, these methods are not efficient in predicting neither the consistency in fresh state nor the strength in hardened state, and do not consider the effect of curing on the latter. The main objective of the research study herein described is to build an analytical model, based on artificial neural networks (ANN), to predict the required performance of UHPC. Specifically, back-propagation neural networks (BPNN) are adopted to model the relation between the input and the output parameters of UHPC, for two different curing conditions, including heat treatment and water storage. In order to train the neural network, a total set of 53 different mixtures were designed. It is concluded that the developed model can be used as a reliable method to predict the performance of UHPC.

Artificial Neural Network Training and Software Implementation Techniques

Artificial intelligence (AI) is everywhere and it's here to stay. Most aspects of our lives are now touched by artificial intelligence in one way or another, from deciding what books or flights to buy online to whether our job applications are successful, whether we receive a bank loan, and even what treatment we receive for cancer. Artificial Neural Networks (ANNs) as a part of AI maintains the capacity to solve problems such as regression and classification with high levels of accuracy. This book aims to discuss the usage of ANNs for optimal solving of time series applications and clustering. Bounding of optimization methods particularly metaheuristics considered as global optimizers with ANNs make a strong and reliable prediction tool for handling real-life application. This book also demonstrates how different fields of studies utilize ANNs proving its wide reach and relevance.

Convexification and Deconvexification for Training Artificial Neural Networks

Presents some of the most promising current research in the design and training of artificial neural networks (ANNs) with applications in speech and vision, as reported by the investigators themselves. The volume is divided into three sections. The first gives an overview of the general field of ANN.

Massive-Training Artificial Neural Networks (MTANN) in Computer-Aided Detection of Colorectal Polyps and Lung Nodules in CT

The purpose of this dissertation research is to overcome a fundamental problem in the theory and application of artificial neural networks (ANNs). The problem, called the local minimum problem in training ANNs, has plagued the ANN community since the middle of 1980s.

Unlocking the Potential of Neural Networks in Resource and Data Constrained Environments

Neural Networks for Complete Beginners

Recent Trends in Artificial Neural Networks

This book provides comprehensive coverage of neural networks, their evolution, their structure, the problems they can solve, and their applications. The first half of the book looks at theoretical investigations on artificial neural networks and addresses the key architectures that are capable of implementation in various application scenarios. The second half is designed specifically for the production of solutions using artificial neural networks to solve practical problems arising from different
areas of knowledge. It also describes the various implementation details that were taken into account to achieve the reported results. These aspects contribute to the maturation and improvement of experimental techniques to specify the neural network architecture that is most appropriate for a particular application scope. The book is appropriate for students in graduate and upper undergraduate courses in addition to researchers and professionals.

Training Artificial Neural Networks Using Graphics Processing Units

Concrete deterioration standards containing various levels of microcracks were engineered by adding calcium sulfate to the concrete mixture and curing under moisture at 38 deg. C (100 deg. F). The level of the microcracks was classified according to the speed of the ultrasonic pulse velocity (UPV) through the specimens using the American Society for Testing and Material (ASTM) C 597 (ASTM 1994c) test method and was found to vary uniformly from 1,737 to 4,877 m/sec (5,700 to 16,000 ft/sec). After receiving some preprocessing, 186 ultrasonic pulse echo (UPE) signals were used as input training examples for the artificial neural network (ANN) system. Target values for the ANN were the measured UPVs as determined form the ASTM C 597 test method. The correlation coefficient from a least squares fit was 98.6 percent. After training, the ANN was performance tested with 30 UPE signals that the model had not seen in training. A least squares fit demonstrated that the output velocities from the ANN correlated well with the measured (target) UPVs. The correlation coefficient was 84.8 percent. The system was able to rank all six specimens in the correct order of deterioration. This investigation demonstrates that the automated interpretation of UPE signals for continuous interfaces by the ANN is feasible.

Artificial Neural Networks

Parallel Tangent Learning Algorithm for Training Artificial Neural Networks

Massive-Training Artificial Neural Networks (MTANN) in Computer-Aided Detection of Colorectal Polyps and Lung Nodules in CT.

Neural Networks for Electronics Hobbyists

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.

Artificial Neural Networks and Machine Learning -- ICANN 2012

This book was primarily written for an audience that has heard about neural networks or has had some experience with the algorithms, but would like to gain a deeper understanding of the fundamental material. For those that already have a solid grasp of how to create a neural network application, this work can provide a wide range of examples of nuances in network design, data set design, testing strategy, and error analysis. Computational, rather than artificial, modifiers are used for neural networks in this book to make a distinction between networks that are implemented in hardware and those that are implemented in software. The term artificial neural network covers any implementation that is inorganic and is the most general term. Computational neural networks are only implemented in software but represent the vast majority of applications. While this book cannot provide a blueprint for every conceivable geophysics application, it does outline a basic approach that has been used successfully.

Artificial Neural Networks for Speech and Vision

MATLAB has the tool Neural Network Toolbox that provides algorithms, functions, and apps to create, train, visualize, and simulate neural networks. You can perform classification, regression, clustering, dimensionality reduction, time-series forecasting, and dynamic system modeling and control. The toolbox
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includes convolutional neural network and autoencoder deep learning algorithms for image classification and feature learning tasks. To speed up training of large data sets, you can distribute computations and data across multicore processors, GPUs, and computer clusters using Parallel Computing Toolbox. The more important features are the following:
- Deep learning, including convolutional neural networks and autoencoders
- Parallel computing and GPU support for accelerating training (with Parallel Computing Toolbox)
- Supervised learning algorithms, including multilayer, radial basis, learning vector quantization (LVQ), time-delay, nonlinear autoregressive (NARX), and recurrent neural network (RNN)
- Unsupervised learning algorithms, including self-organizing maps and competitive layers
- Apps for data-fitting, pattern recognition, and clustering
- Preprocessing, postprocessing, and network visualization for improving training efficiency and assessing network performance
- Simulink(R) blocks for building and evaluating neural networks and for control systems applications

Neural networks are composed of simple elements operating in parallel. These elements are inspired by biological nervous systems. As in nature, the connections between elements largely determine the network function. You can train a neural network to perform a particular function by adjusting the values of the connections (weights) between elements.

Designing and Training Feed-Forward Artificial Neural Networks For Secure Access Authorization

Data driven methods based on deep neural networks (DNNs) have ushered in a new era in the field of machine learning computer vision. Conventional algorithmic approaches are being replaced by end-to-end deep learning systems that can leverage big data. Deep learning has begun revolutionizing human centric fields such as health-care and finance, finding its way into automated screening and diagnoses. At present, developing and training artificial neural network architectures requires both human expertise and labor, requiring millions of labeled data-points to train and hours of engineering effort to develop best performing architectures. In this dissertation, my goal is to make deep learning more accessible by developing algorithms for low shot learning (learning from a few examples). This work includes new semi-supervised approaches to learn from unlabeled datasets with only a fraction of labeled examples, deep learning methods to learn from generated data using simulation based techniques, and learning to optimize neural networks for smaller data sets. Specifically, this dissertation focuses on two proposed directions which will contribute towards both technical and conceptual advances in literature.

- How can we use invariant-based approaches when training from small datasets?
- How to enable training from multiple data sources carrying very small amounts of data?
- How to use meta-modeling approach to automatically generate high-performing DNNs?

To address these questions, this dissertation describes machine learning algorithms as follows:
(a) an action recognition autoencoder which learns over very small datasets;
(b) an algorithm to train deep neural networks over multiple entities;
(c) a meta-modeling approach to automatically generate high-performing architectures.

We also provide a dataset of neural network topologies used for predicting accuracy of a deep neural network.

Machine Learning for Beginners

Neural Network Architectures Examples Using Matlab

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.

Artificial Neural Networks for Civil Engineers

Designing and Training Feed-Forward Artificial Neural Networks For Secure Access Authorization.

Machine Learning
Do want to learn how machine learning and neural networks work quickly and simply? Do you want to know how to build a machine learning model and you have no programming skill? Do you want to get started with learning data science? This bundle is going to guide you to the basics and the principles behind machine learning. Machine learning is an active research domain and includes several different approaches. This bundle is going to help you understand the different approaches of machine learning and neural networks. It will guide you through the steps you need to build a machine learning model. Machine learning implies programming. This bundle will teach you Python programming. This bundle does not require any pre-programming skills. It will help to get you started in Python programming, as well as how to use Python libraries to analyze data and apply machine learning. Overall, this bundle is a go-to guide for getting started in machine learning modeling using Python programming.

Once you get through the bundle, you will be able to develop your own machine learning models using Python. Through this bundle, you will learn:
- Principles of machine learning
- Types of machine learning: supervised, unsupervised, semi-supervised, and reinforcement learning
- Advantages of each type of machine learning
- Types of neural networks
- Steps to develop and fit artificial neural network model
- Getting started and installing Python
- Tools and platforms for Python programming
- How to use pandas, NumPy and matplotlib Python libraries
- How to develop a simple linear and logistic machine learning model
- How to develop and train a multi-layer artificial neural network two ways: from scratch and using the Python libraries
- When to use each type of machine learning
- The general concept of artificial neural networks
- Activation function in artificial neural network and to choose an activation function within an artificial neural network
- The 5 main types of artificial neural network
- The best function to be used to train artificial neural networks.
- The 2 main concepts to know in the training process of the artificial neural network
- the main variants and algorithms for the formation of an artificial neural network and a machine learning model in general.

Even if you don't have any background in machine learning and Python programming, this book will give you the tools to develop machine learning models.

Application of Artificial Neural Networks to Ultrasonic Pulse Echo System for Detecting Microcracks in Concrete

The risk reduction potential of the class of artificial neural networks based on the Barto-Sutton architecture is established. The risk associated with nuclear power operations is characterized by sequences of discrete events, such as technical specification violation. The Barto-Sutton architecture has the capability to synthesize precursors to these events, and to synthesize mitigative control policies. To establish the risk reduction potential of the network, network control of a complex reactor control task was demonstrated. The task exemplifies the structure of risk in modern nuclear power plant operation.

Focus on Artificial Neural Networks

Deep Learning

Artificial Neural Networks and Machine Learning – ICANN 2018

This three-volume set LNCS 11139-11141 constitutes the refereed proceedings of the 27th International Conference on Artificial Neural Networks, ICANN 2018, held in Rhodes, Greece, in October 2018. The papers presented in these volumes was carefully reviewed and selected from total of 360 submissions. They are related to the following thematic topics: AI and Bioinformatics, Bayesian and Echo State Networks, Brain Inspired Computing, Chaotic Complex Models, Clustering, Mining, Exploratory Analysis, Coding Architectures, Complex Firing Patterns, Convolutional Neural Networks, Deep Learning (DL), DL in Real Time Systems, DL and Big Data Analytics, DL and Big Data, DL and Forensics, DL and Cybersecurity, DL and Social Networks, Evolving Systems – Optimization, Extreme Learning Machines, From Neurons to Neuromorphism, From Sensation to Perception, From Single Neurons to Networks, Fuzzy Modeling, Hierarchical ANN, Inference and Recognition, Information and Optimization, Interacting with The Brain, Machine Learning (ML), ML for Bio Medical systems, ML and Video-Image Processing, ML and Forensics, ML and Cybersecurity, ML and Social Media, ML in Engineering, Movement and Motion Detection, Multilayer Perceptrons and Kernel Networks, Natural Language, Object and Face
Comparing the Efficiency of Serial and Parallel Algorithms for Training Artificial Neural Networks Using Computer Clusters

A New Approach for Training and Testing Artificial Neural Networks for Permeability Prediction

This comprehensive tutorial on artificial 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.

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