

An Introduction To Neural Networks

Surprising tales from the scientists who first learned how to use computers to understand the workings of the human brain. Since World War II, a group of scientists has been attempting to understand the human nervous system and to build computer systems that emulate the brain's abilities. Many of the early workers in this field of neural networks came from cybernetics; others came from neuroscience, physics, electrical engineering, mathematics, psychology, even economics. In this collection of interviews, those who helped to shape the field share their childhood memories, their influences, how they became interested in neural networks, and what they see as its future. The subjects tell stories that have been told, referred to, whispered about, and imagined throughout the history of the field. Together, the interviews form a Rashomon-like web of reality. Some of the mythic people responsible for the foundations of modern brain theory and cybernetics, such as Norbert Wiener, Warren McCulloch, and Frank Rosenblatt, appear prominently in the recollections. The interviewees agree about some things and disagree about more. Together, they tell the story of how science is actually done, including the false starts, and the Darwinian struggle for jobs, resources, and reputation. Although some of the interviews contain technical material, there is no actual mathematics in the book. Contributors James A. Anderson, Michael Arbib, Gail Carpenter, Leon Cooper, Jack Cowan, Walter Freeman, Stephen Grossberg, Robert Hecht-Neilsen, Geoffrey Hinton, Teuvo Kohonen, Bart Kosko, Jerome Lettvin, Carver Mead, David Rumelhart, Terry Sejnowski, Paul Werbos, Bernard Widrow

In addition to showing the programmer how to construct Neural Networks, the book discusses the Java Object Oriented Neural Engine (JOONE), a free open source Java neural engine. (Computers)

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.

Neural networks have received a great deal of attention among scientists and engineers. In chemical engineering, neural computing has moved from pioneering projects toward mainstream industrial applications. This book introduces the fundamental principles of neural computing, and is the first to focus on its practical applications in bioprocessing and chemical engineering. Examples, problems, and 10 detailed case studies demonstrate how to develop, train, and apply neural networks. A disk containing input data files for all illustrative examples, case studies, and practice problems provides the opportunity for hands-on experience. An important goal of the book is to help the student or practitioner learn and implement neural networks quickly and inexpensively using commercially available, PC-based software tools. Detailed network specifications and training procedures are included for all neural network examples discussed in the book. Each chapter contains an introduction, chapter summary, references to further reading, practice problems, and a section on nomenclature. Includes a PC-compatible disk containing input data files for examples, case studies, and practice problems. Presents 10 detailed case studies. Contains an extensive glossary, explaining terminology used in neural network applications in science and engineering. Provides examples, problems, and ten detailed case studies of neural computing applications, including: Process fault-diagnosis of a chemical reactor Leonard Kramer fault-classification problem Process fault-diagnosis for an unsteady-state continuous stirred-tank reactor system Classification of protein secondary-structure categories Quantitative prediction and regression analysis of complex chemical kinetics Software-based sensors for quantitative predictions of product compositions from fluorescent spectra in bioprocessing Quality control and optimization of an autoclave curing process for manufacturing composite materials Predictive modeling of an experimental batch fermentation process Supervisory control of the Tennessee Eastman plantwide control problem Predictive modeling and optimal design of extractive bioseparation in aqueous two-phase systems

Fundamentals of Neural Network Modeling

An Introduction for Scientists and Engineers

Introduction to Neural Networks Using Matlab 6.0

Artificial Neural Networks

Weekly Compilation of Presidential Documents

Introduction to Neural Networks in Java, Second Edition, introduces the Java programmer to the world of Neural Networks and Artificial Intelligence. Neural network architectures such as the feedforward, Hopfield, and Self Organizing Map networks are discussed. Training techniques such as Backpropagation, Genetic Algorithms and Simulated Annealing are also introduced. Practical examples are given for each neural network. Examples include the Traveling Salesman problem, handwriting recognition, financial prediction, game strategy, learning mathematical functions and special application to Internet bots. All Java source code can be downloaded online.

Elements of Artificial Neural Networks provides a clearly organized general introduction, focusing on a broad range of algorithms, for students and others who want to use neural networks rather than simply study them. The authors, who have been developing and team teaching the material in a one-semester course over the past six years, describe most of the basic neural network models (with several detailed solved examples) and discuss the rationale and advantages of the models, as well as their limitations. The approach is practical and open-minded and requires very little mathematical or technical background. Written from a computer science and statistics point of view, the text stresses links to contiguous fields and can easily serve as a first course for students in economics and management. The opening chapter sets the stage, presenting the basic concepts in a clear and objective way and tackling important -- yet rarely addressed -- questions related to the use of neural networks in practical situations. Subsequent chapters on supervised learning (single layer and multilayer networks), unsupervised learning, and associative models are structured around classes of problems to which networks can be applied. Applications are discussed along with the algorithms. A separate chapter takes up optimization methods. The most frequently used algorithms, such as backpropagation, are introduced early on, right after perceptrons, so that these can form the basis for initiating course projects. Algorithms published as late as 1995 are also included. All of the algorithms are presented using block-structured pseudo-code, and exercises are provided throughout. Software implementing many commonly used neural network algorithms is available at the book's website. Transparency masters, including abbreviated text and figures for the entire book, are available for instructors using the text.

This book is a beginning graduate-level introduction to neural networks which is divided into four parts.

Graphs are useful data structures in complex real-life applications such as modeling physical systems, learning molecular fingerprints, controlling traffic networks, and recommending friends in social networks. However, these tasks require dealing with non-Euclidean graph data that contains rich relational information between elements and cannot be well handled by traditional deep learning models (e.g., convolutional neural networks (CNNs) or recurrent neural networks (RNNs)). Nodes in graphs usually contain useful feature information that cannot be well addressed in most unsupervised representation learning methods (e.g., network embedding methods). Graph neural networks (GNNs) are proposed to combine the feature information and the graph structure to learn better representations on graphs via feature propagation and aggregation. Due to its convincing performance and high interpretability, GNN has recently become a widely applied graph analysis tool. This book provides a comprehensive introduction to the basic concepts, models, and applications of graph neural networks. It starts with the introduction of the vanilla GNN model. Then several variants of the vanilla model are introduced such as graph convolutional networks, graph recurrent networks, graph attention networks, graph residual networks, and several general frameworks. Variants for different graph types and advanced training methods are also included. As for the applications of GNNs, the book categorizes them into structural, non-structural, and other scenarios, and then it introduces several typical models on solving these tasks. Finally, the closing chapters provide GNN open resources and the outlook of several future directions.

An Introduction

Introduction to Neural and Cognitive Modeling

The Math of Neural Networks

A Systematic Introduction

A step-by-step gentle journey through the mathematics of neural networks, and making your own using the Python computer language. Neural networks are a key element of deep learning and artificial intelligence, which today is capable of some truly impressive feats. Yet too few really understand how neural networks actually work. This guide will take you on a fun and unhurried journey, starting from very simple ideas, and gradually building up an understanding of how neural networks work. You won't need any mathematics beyond secondary school, and an accessible introduction to calculus is also included. The ambition of this guide is to make neural networks as accessible as possible to as many readers as possible - there are enough texts for advanced readers already! You'll learn to code in Python and make your own neural network, teaching it to recognise human handwritten numbers, and performing as well as professionally developed networks. Part 1 is about ideas. We introduce the mathematical ideas underlying the neural networks, gently with lots of illustrations and examples. Part 2 is practical. We introduce the popular and easy to learn Python programming language, and gradually build up a neural network which can learn to recognise human handwritten numbers, easily getting it to perform as well as networks made by professionals. Part 3 extends these ideas further. We push the performance of our neural network to an industry leading 98% using only simple ideas and code, test the network on your own handwriting, take a privileged peek inside the mysterious mind of a neural network, and even get it all working on a Raspberry Pi. All the code in this has been tested to work on a Raspberry Pi Zero.

This modern and self-contained book offers a clear and accessible introduction to the important topic of machine learning with neural networks. In addition to describing the mathematical principles of the topic, and its historical evolution, strong connections are drawn with underlying methods from statistical physics and current applications within science and engineering. Closely based around a well-established undergraduate course, this pedagogical text provides a solid understanding of the key aspects of modern machine learning with artificial neural networks, for students in physics, mathematics, and engineering. Numerous exercises expand and reinforce key concepts within the book and allow students to hone their programming skills. Frequent references to current research develop a detailed perspective on the state-of-the-art in machine learning research.

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.

This book covers theoretical aspects as well as recent innovative applications of Artificial Neural networks (ANNs) in natural, environmental, biological, social, industrial and automated systems. It presents recent results of ANNs in modelling small, large and complex systems under three categories, namely, 1) Networks, Structure Optimisation, Robustness and Stochasticity 2) Advances in Modelling Biological and Environmental Systems and 3) Advances in Modelling Social and Economic Systems. The book aims at serving undergraduates, postgraduates and researchers in ANN computational modelling.

An Introduction to the Modeling of Neural Networks

Introduction to Deep Learning and Neural Networks with PythonTM

Exploring Neural Networks with C#

Sensitivity Analysis for Neural Networks

Machine Learning with Neural Networks

The twenty last years have been marked by an increase in available data and computing power. In parallel to this trend, the focus of neural network research and the practice of training neural networks has undergone a number of important changes, for example, use of deep learning machines. The second edition of the book augments the first edition with more tricks, which have resulted from 14 years of theory and experimentation by some of the world's most prominent neural network researchers. These tricks can make a substantial difference (in terms of speed, ease of implementation, and accuracy) when it comes to putting algorithms to work on real problems.

Artificial neural networks are used to model systems that receive inputs and produce outputs. The relationships between the inputs and outputs and the representation parameters are critical issues in the design of related engineering systems, and sensitivity analysis concerns methods for analyzing these relationships. Perturbations of neural networks are caused by machine imprecision, and they can be simulated by embedding disturbances in the original inputs or connection weights, allowing us to study the characteristics of a function under small perturbations of its parameters. This is the first book to present a systematic description of sensitivity analysis methods for artificial neural networks. It covers sensitivity analysis of multilayer perceptron neural networks and radial basis function neural networks, two widely used models in the machine learning field. The authors examine the applications of such analysis in tasks such as feature selection, sample reduction, and network optimization. The book will be useful for engineers applying neural network sensitivity analysis to solve practical problems, and for researchers interested in foundational problems in neural networks.

This book presents carefully revised versions of tutorial lectures given during a School on Artificial Neural Networks for the industrial world held at the University of Limburg in Maastricht, Belgium. The major ANN architectures are discussed to show their powerful possibilities for empirical data analysis, particularly in situations where other methods seem to fail. Theoretical insight is offered by examining the underlying mathematical principles in a detailed, yet clear and illuminating way. Practical experience is provided by discussing several real-world applications in such areas as control, optimization, pattern recognition, software engineering, robotics, operations research, and CAM.

Neural Networks presents concepts of neural-network models and techniques of parallel distributed processing in a three-step approach: - A brief overview of the neural structure of the brain and the history of neural-network modeling introduce to associative memory, preceptrons, feature-sensitive networks, learning strategies, and practical applications. - The second part covers subjects like statistical physics of spin glasses, the mean-field theory of the Hopfield model, and the "space of interactions" approach to the storage capacity of neural networks. - The final part discusses nine programs with practical demonstrations of neural-network models. The software and source code in C are on a 3 1/2" MS-DOS diskette can be run with Microsoft, Borland, Turbo-C, or compatible compilers.

An Introduction to ANN Theory and Practice

An Introduction to Neural Networks

Artificial Neural Network Modelling

Introduction to Graph Neural Networks

2nd Edition

This book provides a broad yet detailed introduction to neural networks and machine learning in a statistical framework. A single, comprehensive resource for study and further research, it explores the major popular neural network models and statistical learning approaches with examples and exercises and allows readers to gain a practical working understanding of the content. This updated new edition presents recently published results and includes six new chapters that correspond to the recent advances in computational learning theory, sparse coding, deep learning, big data and cloud computing. Each chapter features state-of-the-art descriptions and significant research findings. The topics covered include: • multilayer perceptron; • the Hopfield network; • associative memory models; • clustering models and algorithms; • the radial basis function network; • recurrent neural networks; • nonnegative matrix factorization; • independent component analysis; • probabilistic and Bayesian networks; and • fuzzy sets and logic. Focusing on the prominent accomplishments and their practical aspects, this book provides academic and technical staff, as well as graduate students and researchers with a solid foundation and comprehensive reference on the fields of neural networks, pattern recognition, signal processing, and machine learning.

This resource introduces the C# programmer to the world of Neural Networks and Artificial Intelligence. Training techniques, such as backpropagation, genetic algorithms, and simulated annealing are also introduced.

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

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.

Introduction to Neural Networks

An Introduction to Neural Network Methods for Differential Equations

Neuropsychology and Cognitive Neuroscience

Neural Networks and Deep Learning

Introduction to Neural Networks with Java

There are many reasons why neural networks fascinate us and have captivated headlines in recent years. They make web searches better, organize photos, and are even used in speech translation. Heck, they can even generate encryption. Also mysterious and mind-bending: how exactly do they accomplish these things? What goes on inside a neural network?On a high level, a network learns just like we do, through trial and error. This is true regardless if the network is supervised or semi-supervised. Once we dig a bit deeper though, we discover that a handful of mathematical functions play a major role in the trial and error process. It also becomes clear that a grasp of the underlying mathematics helps clarify how a following chapters we will unpack the mathematics that drive a neural network. To do this, we will use a feedforward network as our model and follow input as it moves through the network.

Neural networks are a computing paradigm that is finding increasing attention among computer scientists. In this book, theoretical laws and models previously scattered in the literature are brought together into a general theory of artificial neural networks, with a view to biology and starting with the simplest nets, it is shown how the properties of models change when more general computing elements and net topologies are introduced. Each chapter contains examples, numerous illustrations, and is aimed at readers who seek an overview of the field or who wish to deepen their knowledge. It is suitable as a basis for university courses in neurocomputing.

Introduction to Deep Learning and Neural Networks with PythonTM: A Practical Guide is an intensive step-by-step guide for neuroscientists to fully understand, practice, and build neural networks. Providing math and PythonTM code examples

network calculations, by book's end readers will fully understand how neural networks work starting from the simplest model $Y=X$ and building from scratch. Details and explanations are provided on how a generic gradient descent algorithm, mathematical and Python™ examples, teaching you how to use the gradient descent algorithm to manually perform all calculations in both the forward and backward passes of training a neural network. Examines the practical side of deep neural networks Provides a problem-based approach to building artificial neural networks using real data Describes Python™ functions and features for neuroscientists Uses a careful tutorial approach to describe implementation of neural networks math and code examples (via companion website) with helpful instructions for easy implementation

There is a deep desire in men, in order to reproduce intelligence and place it in a machine. Neural Networks are an attempt to reproduce the synaptic connections of our brain in a computer. Duplicating the way we use our neurons to think to have a device that could be able to do "intelligent" tasks, the ones reserved just to humans some time ago. Neural Network are a reality now, not a fantasy, and they have been made in order to recognize patterns (a face ,a photograph) and forecast trends. I have seen many books about this subject in my life. All of them are hard to read, and tedious to learn, so I decided to make my own one. For beginner readers, I have tried to use a simple language, in order to be understood. I know about nets. An easy to read, practical and concise work. If you are interested in the brain functions and how can we simulate it in a computer, you'll get here a different way to penetrate into their secrets.For advanced readers who are interested in neural networks, I have included a methodology for building neural networks and complete sample computer source-code with tricks that will save you a lot of time while designing it.

Artificial Neural Network Applications in Business and Engineering

Talking Nets

Concepts, Tools and Techniques Explained for Absolute Beginners

Make Your Own Neural Network

Neural Networks

The utility of artificial neural network models lies in the fact that they can be used to infer functions from observationsmaking them especially useful in applications where the complexity of data or tasks makes the design of such functions by hand impractical.Exploring Neural

Networks with C# presents the important properties of neural networks

An Introduction to Neural Networks falls into a new ecological niche for texts. Based on notes that have been class-tested for more than a decade, it is aimed at cognitive science and neuroscience students who need to understand brain function in terms of computational modeling, and at engineers who want to go beyond formal algorithms to applications and computing strategies. It is the only current text to approach networks from a broad neuroscience and cognitive science perspective, with an emphasis on the biology and psychology behind the assumptions of the models, as well as on what the models might be used for. It describes the mathematical and computational tools needed and provides an account of the author's own ideas. Students learn how to teach arithmetic to a neural network and get a short course on linear associative memory and adaptive maps. They are introduced to the author's brain-state-in-a-box (BSB) model and are provided with some of the neurobiological background necessary for a firm grasp of the general subject. The field now known as neural networks has split in recent years into two major groups, mirrored in the texts that are currently available: the engineers who are primarily interested in practical applications of the new adaptive, parallel computing technology, and the cognitive scientists and neuroscientists who are interested in scientific applications. As the gap between these two groups widens, Anderson notes that the academics have tended to drift off into irrelevant, often excessively abstract research while the engineers have lost contact with the source of ideas in the field. Neuroscience, he points out, provides a rich and valuable source of ideas about data representation and setting up the data representation is the major part of neural network programming. Both cognitive science and neuroscience give insights into how this can be done effectively: cognitive science suggests what to compute and neuroscience suggests how to compute it.

Provides an introduction to the neural network modeling of complex cognitive and neuropsychological processes. Over the past few years, computer modeling has become more prevalent in the clinical sciences as an alternative to traditional symbol-processing models. This book provides an introduction to the neural network modeling of complex cognitive and neuropsychological processes. It is intended to make the neural network approach accessible to practicing neuropsychologists, psychologists, neurologists, and psychiatrists. It will also be a useful resource for computer scientists, mathematicians, and interdisciplinary cognitive neuroscientists. The editors (in their introduction) and contributors explain the basic concepts behind modeling and avoid the use of high-level mathematics. The book is divided into four parts. Part I provides an extensive but basic overview of neural network modeling, including its history, present, and future trends. It also includes chapters on attention, memory, and primate studies. Part II discusses neural network models of behavioral states such as alcohol dependence, learned helplessness, depression, and waking and sleeping. Part III presents neural network models of neuropsychological tests such as the Wisconsin Card Sorting Task, the Tower of Hanoi, and the Stroop Test. Finally, part IV describes the application of neural network models to dementia: models of acetylcholine and memory, verbal fluency, Parkinsons disease, and Alzheimer's disease. Contributors J. Wesson Ashford, Rajendra D. Badgaiyan, Jean P. Banquet, Yves Burnod, Nelson Butters, John Cardoso, Agnes S. Chan, Jean-Pierre Changeux, Kerry L. Coburn, Jonathan D. Cohen, Laurent Cohen, Jose L. Contreras-Vidal, Antonio R. Damasio, Hanna Damasio, Stanislas Dehaene, Martha J. Farah, Joaquin M. Fuster, Philippe Gaussier, Angelika Gissler, Dylan G. Harwood, Michael E. Hasselmo, J. Allan Hobson, Sam Leven, Daniel S. Levine, Debra L. Long, Roderick K. Mahurin, Raymond L. Ownby, Randolph W. Parks, Michael I. Posner, David P. Salmon, David Servan-Schreiber, Chantal E. Stern, Jeffrey P. Sutton, Lynette J. Tippett, Daniel Tranel, Bradley Wyble

This thoroughly, thoughtfully revised edition of a very successful textbook makes the principles and the details of neural network modeling accessible to cognitive scientists of all varieties as well as to others interested in these models. Research since the publication of the first edition has been systematically incorporated into a framework of proven pedagogical value. Features of the second edition include: * A new section on spatiotemporal pattern processing * Coverage of ARTMAP networks (the supervised version of adaptive resonance networks) and recurrent back-propagation networks * A vastly expanded section on models of specific brain areas, such as the cerebellum, hippocampus, basal ganglia, and visual and motor cortex * Up-to-date coverage of applications of neural networks in areas such as combinatorial optimization and knowledge representation As in the first edition, the text includes extensive introductions to neuroscience and to differential and difference equations as appendices for students without the requisite background in these areas. As graphically revealed in the flowchart in the front of the book, the text begins with simpler processes and builds up to more complex multilevel functional systems. For more information visit the author's personal Web site at www.uta.edu/psychology/faculty/levine/

Neural Networks: Tricks of the Trade

A Practical Guide

Design, Theory, and Applications

Neural Networks in Bioprocessing and Chemical Engineering

An Oral History of Neural Networks

Please note this is a Short Discount publication. Neural network technology has been a curiosity since the early days of computing. Research in the area went into a near dormant state for a number of years, but recently there has been a new increased interest in the subject. Interest in the military, apparent ease of implementation, and the ability of the technology to develop computers which are able to learn from experience. This report summarizes the topic, providing the reader with an overview of the field and its potential direction. Included is a list of future directions, as well as a set of examples of possible applications and potential implementation technologies.

Neural computing is one of the most interesting and rapidly growing areas of research, attracting researchers from a wide variety of scientific disciplines. Starting from the basics, Neural Computing covers all the major approaches, putting each in perspective in terms of their strengths and weaknesses. The book also highlights the applications of each approach and explores the relationships among models developed and between the brain and its function. A comprehensive and comprehensible introduction to the subject, this book is ideal for undergraduates in computer science and psychology, and workers involved in artificial intelligence, biologists, psychologists, and physiologists.

Comprehensive introduction to the neural network models currently under intensive study for computational applications. It also provides coverage of neural network applications in a variety of problems of both theoretical and practical interest.

This updated and revised second edition assumes no prior knowledge and sets out to describe what neural nets are, what they do, and how they do it. The main networks covered include ADALINE, WISARD, the Hopfield Network, Bidirectional Associative Memory, the Boltzmann network, and Kohonen's self-organizing maps. These networks are discussed by means of examples, giving the reader a good overall knowledge of current developments in the field.

A Textbook

Introduction To The Theory Of Neural Computation

Elements of Artificial Neural Networks

Neural Computing - An Introduction

Introduction to Neural Networks for C# (2nd Edition)

***** Buy now (Will soon return to \$75.99 + Special Offer Below) ***** Free Kindle eBook for customers who purchase the print book from Amazon Are you thinking of learning more about Artificial Neural Network? This book has been written in layman's terms as an introduction to neural networks and their algorithms. Each algorithm is explained very easily for more understanding. Several Visual Illustrations and Examples Instead of tough math formulas, this book contains several graphs and images which detail all algorithms and their applications in all area of the real life. Why this book is different ? An Artificial Neural Network (ANN) is a computational model. It is based on the structure and functions of biological neural networks. It works like the way human (animal) brain processes information. It includes a large number of connected processing units called neurons that work together to process information. They also generate meaningful results from it. In this book, we will take you through the complete introduction to Artificial Neural Network, Artificial Neural Network Structure, layers of ANN, Applications, Algorithms, Tools and technology, Practical implementations and the benefits and limitations of ANN. This book takes a different approach that is based on providing simple examples of how ANN algorithms work, and building on those examples step by step to encompass the more complicated parts of the algorithms. Target Users The book designed for a variety of target audiences. The most suitable users would include: Beginners who want to approach ANN, but are too afraid of complex math to start Newbies in computer science techniques and ANN Professionals in data science and social sciences Professors, lecturers or tutors who are looking to find better ways to explain the content to their students in the simplest and easiest way Students and academicians, especially those focusing on neural networks and deep learning What's inside this book? What is Artificial Neural Network? Why Neural Networks? Major Variants of Artificial Neural Network Tools and Technologies Practical implementations Major NN projects Open sources resources Issues and Challenges Applications of ANN Deep Learning: What & Why? Our Future with Deep Learning Applied The Long-Term Vision of Deep Learning Glossary of Some Useful Terms in Neural Networks Frequently Asked Questions Q: Is this book for me and do I need programming experience? A: If you want to learn more about deep learning with practical applications, this book is for you. This book has been written in layman's terms as an introduction to neural networks and their algorithms. Each algorithm is explained very easily for more understanding. No coding experience is required. Some practical examples is presented with Python but it is not the major part of the book. Q: Can I loan this book to friends? A: Yes. Under Amazon's Kindle Book Lending program, you can lend this book to friends and family for a duration of 14 days. Q: Does this book include everything I need to become a Neural Networks expert? A: Unfortunately, no. This book is designed for readers taking their first steps in neural networks and further learning will be required beyond this book to master all aspects of neural networks. Q: Can I have a refund if this book is not fitted for me? A: Yes, Amazon refund you if you aren't satisfied, for more information about the amazon refund service please go to the amazon help platform. will also be happy to help you if you send us an email at customerservice@datasciences-book.com.

An Introduction to Neural NetworksCRC Press

Efficient Query Processing for Scalable Web Search will be a valuable reference for researchers and developers working on This tutorial provides an accessible, yet comprehensive, overview of the state-of-the-art of Neural Information Retrieval.

This book introduces a variety of neural network methods for solving differential equations arising in science and engineering. The emphasis is placed on a deep understanding of the neural network techniques, which has been presented in a mostly heuristic and intuitive manner. This approach will enable the reader to understand the working, efficiency and shortcomings of each neural network technique for solving differential equations. The objective of this book is to provide the reader with a sound understanding of the foundations of neural networks and a comprehensive introduction to neural network methods for solving differential equations together with recent developments in the techniques and their applications. The book comprises four major sections. Section I consists of a brief overview of differential equations and the relevant physical problems arising in science and engineering. Section II illustrates the history of neural networks starting from their beginnings in the 1940s through to the renewed interest of the 1980s. A general introduction to neural networks and learning technologies is presented in Section III. This section also includes the description of the multilayer perceptron and its learning methods. In Section IV, the different neural network methods for solving differential equations are introduced, including discussion of the most recent developments in the field. Advanced students and researchers in mathematics, computer science and various disciplines in science and engineering will find this book a valuable reference source.

Understanding 99% of Artificial Neural Networks

Introduction & Tricks

Neural Networks and Statistical Learning

An Introduction to Neural Information Retrieval