

Neural Network Programming With Java Create And Unleash The Power Of Neural Networks By Implementing Professional Java Code

Although interest in machine learning has reached a high point, lofty expectations often scuttle projects before they get very far. How can machine learning—especially deep neural networks—make a real difference in your organization? This hands-on guide not only provides the most practical information available on the subject, but also helps you get started building efficient deep learning networks. Authors Adam Gibson and Josh Patterson provide theory on deep learning before introducing their open-source DeepLearning4J (DL4J) library for developing production-class workflows. Through real-world examples, you'll learn methods and strategies for training deep network architectures and running deep learning workflows on Spark and Hadoop with DL4J. Dive into machine learning concepts in general, as well as deep learning in particular. Understand how deep networks evolved from neural network fundamentals. Explore the major deep network architectures, including Convolutional and Recurrent. Learn how to map specific deep networks to the right problem. Use vector-based general neural networks and specific deep network architectures. Use visualization techniques for different data types with DataVec. DL4J's workflow of Learn how to use DL4J natively on Spark and Hadoop. 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.

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 nets. Always 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 a bibliography. The book 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.

Summary Deep learning has transformed the fields of computer vision, image processing, and natural language applications. Thanks to TensorFlow.js, now JavaScript developers can build deep learning apps without relying on Python or R. Deep Learning with JavaScript shows developers how they can bring DL technology to the web. Written by the main authors of the TensorFlow library, this new book provides fascinating use cases and in-depth instruction for deep learning apps in JavaScript in your browser or on Node. Foreword by the main authors of TensorFlow.js. About the book TensorFlow.js backend opens up exciting possibilities for smart web applications. With the TensorFlow.js library, you build and train deep learning models with JavaScript. Offering uncompromising production-quality scalability, modularity, and responsiveness, TensorFlow.js really shines for its portability. Its models run anywhere JavaScript runs, pushing ML farther up the application stack. About the book in Deep Learning with JavaScript, you'll learn to use TensorFlow.js to build deep learning models that run directly in the browser. This fast-paced book, written by Google engineers, is practical, engaging, and easy to follow. Through diverse examples featuring text analysis, speech processing, image recognition, and self-learning game AI, you'll master all the basics of deep learning and explore advanced concepts, like retaining existing models for transfer learning and image generation. What's inside - Image and language processing in the browser - Tuning ML models with client-side data - Text and image creation with generative deep learning - Source code samples to test and modify About the reader For JavaScript programmers interested in deep learning. About the author Shangling Cai, Stanley Bileschi and Eric D. Nielsen are software engineers with experience on the Google Brain team, and were crucial to the development of the high-level API of TensorFlow.js. This book is based in part on the classic, Deep Learning with Python by François Chollet. TOC: PART 1 - MOTIVATION AND BASIC CONCEPTS 1 • Deep learning and JavaScript PART 2 - A GENTLE INTRODUCTION TO TENSORFLOW.JS 2 • Getting started: Simple linear regression in TensorFlow.js 3 • Adding nonlinearity: Beyond weighted sums 4 • Recognizing images and sounds using convnets 5 • Transfer learning: Reusing pretrained neural networks PART 3 - ADVANCED DEEP LEARNING WITH TENSORFLOW.JS 6 • Working with data 7 • Visualizing data and models 8 • Underfitting, overfitting, and the universal workflow of machine learning 9 • Deep learning for sequences and text 10 • Generative deep learning 11 • Basics of deep reinforcement learning PART 4 - SUMMARY AND CLOSING WORDS 12 • Testing, optimizing, and deploying models 13 • Summary, conclusions, and beyond

Add powerful neural network capabilities to your C# enterprise applications

Practical Neural Network Recipes in C#

Techniques for building machine learning and neural network models for NLP, 2nd Edition

Neural Network Programming with Java - Second Edition

A Systematic Introduction

Learning Network Programming with Java

Uncover the power of artificial neural networks by implementing them through R code. About This Book Develop a strong background in neural networks with R, to implement them in your applications Build smart systems using the power of deep learning Real-world case studies to illustrate the power of neural network models Who This Book Is For This book is intended for anyone who has a statistical background with knowledge in R and wants to work with neural networks to get better results from complex data. If you are interested in artificial intelligence and deep learning and you want to level up, then this book is what you need! What You Will Learn Set up R packages for neural networks and deep learning Understand the core concepts of artificial neural networks Understand neurons, perceptrons, bias, weights, and activation functions Implement supervised and unsupervised machine learning in R for neural networks Predict and classify data automatically using neural networks Evaluate and fine-tune the models you build. In Detail Neural networks are one of the most fascinating machine learning models for solving complex computational problems efficiently. Neural networks are used to solve wide range of problems in different areas of AI and machine learning. This book explains the niche aspects of neural networking and provides you with foundation to get started with advanced topics. The book begins with neural network design using the neural net package, then you'll build a solid foundation knowledge of how a neural network learns from data, and the principles behind it. This book covers various types of neural network including recurrent neural networks and convoluted neural networks. You will not only learn how to train neural networks, but will also explore generalization of these networks. Later we will delve into combining different neural network models and work with the real-world use cases. By the end of this book, you will learn to implement neural network models in your applications with the help of practical examples in the book. Style and approach A step-by-step guide filled with real-world practical examples.

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 and abstract connectionist 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.

Build and run intelligent applications by leveraging key Java machine learning libraries About This Book Develop a sound strategy to solve predictive modelling problems using the most popular machine learning Java libraries. Explore a broad variety of data processing, machine learning, and natural language processing through diagrams, source code, and real-world applications This step-by-step guide will help you solve real-world problems and links neural network theory to their application Who This Book Is For This course is intended for data scientists and Java developers who want to dive into the exciting world of deep learning. It will get you up and running quickly and provide you with the skills you need to successfully create, customize, and deploy machine learning applications in real life. What You Will Learn Get a practical deep dive into machine learning and deep learning algorithms Explore neural networks using some of the most popular Deep Learning frameworks Dive into Deep Belief Nets and Stacked Denoising Autoencoders algorithms Apply machine learning to fraud, anomaly, and outlier detection Experiment with deep learning concepts, algorithms, and the toolbox for deep learning Select and split data sets into training, test, and validation, and explore validation strategies Apply the code generated in practical examples, including weather forecasting and pattern recognition In Detail Machine learning applications are everywhere, from self-driving cars, spam detection, document search, and trading strategies, to speech recognition Starting with an introduction to basic machine learning algorithms, this course takes you further into this vital world of stunning predictive insights and remarkable machine intelligence. This course helps you solve challenging problems in image processing, speech recognition, language modeling. You will discover how to detect anomalies and fraud, and ways to perform activity recognition, image recognition, and text. You will also work with examples such as weather forecasting, disease diagnosis, customer profiling, generalization, extreme machine learning and more. By the end of this course, you will have all the knowledge you need to perform deep learning on your system with varying complexity levels, to apply them to your daily work. The course provides you with highly practical content explaining deep learning with Java, from the following Packt books: Java Deep Learning Essentials Machine Learning in Java Neural Network Programming with Java, Second Edition Style and approach This course aims to create a smooth learning path that will teach you how to effectively use deep learning with Java with other de facto components to get the most out of it. Through this comprehensive course, you'll learn the basics of predictive modelling and progress to solve real-world problems and links neural network theory to their application

Explore various approaches to organize and extract useful text from unstructured data using Java Key Features Use deep learning and NLP techniques in Java to discover hidden insights in text Work with popular Java libraries such as CoreNLP, OpenNLP, and Mallet Explore machine translation, identifying parts of speech, and topic modeling Book Description Natural Language Processing (NLP) allows you to take any sentence and identify patterns, special names, company names, and more. The second edition of Natural Language Processing with Java teaches you how to perform language analysis with the help of Java libraries, while constantly gaining insights from the outcomes. You'll start by understanding how NLP and its various concepts work. Having got to grips with the basics, you'll explore important tools and libraries in Java for NLP, such as CoreNLP, OpenNLP, Neuroph, and Mallet. You'll then start performing NLP on different inputs and tasks, such as tokenization, model training, parts-of-speech and parsing trees. You'll learn about statistical machine translation, summarization, dialog systems, complex searches, supervised and unsupervised NLP, and more. By the end of this book, you'll have learned more about NLP, neural networks, and various other trained models in Java for enhancing the performance of NLP applications. What you will learn Understand basic NLP tasks and how they relate to one another Discover and use the available tokenization engines Apply search techniques to find people, as well as things, within a document Construct solutions to identify parts of speech within sentences Use parsers to extract relationships between elements of a document Identify topics in a set of documents Explore topic modeling from a document Who this book is for Natural Language Processing with Java is for you if you are a data analyst, data scientist, or machine learning engineer who wants to extract information from a language using Java. Knowledge of Java programming is needed, while a basic understanding of statistics will be useful but not mandatory.

Smart models using CNN, RNN, deep learning, and artificial intelligence principles

Handbook of Neuroevolution Through Erlang

Deep Learning: Practical Neural Networks with Java

Train neural networks for classification, NLP, and reinforcement learning using DeepLearning4J

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

Chaos, Fractals, Cellular Automata, Neural Networks, Genetic Algorithms, Gene Expression Programming, Support Vector Machine, Wavelets, Hidden Markov Models, Fuzzy Logic with C++, Java and SymbolicC++ Programs Fourth Edition

Create and unleash the power of neural networks by implementing C# and .Net code Key FeaturesGet a strong foundation of neural networks with access to various machine learning and deep learning librariesReal-world case studies illustrating various neural network techniques and architectures used by practitionersCutting-edge coverage of Deep Networks, optimization algorithms, convolutional networks, autoencoders and many moreBook Description Neural networks have made a surprise comeback in the last few years and have brought tremendous innovation in the world of artificial intelligence. The goal of this book is to provide C# programmers with practical guidance in solving complex computational challenges using neural networks and C# libraries such as CNTK, and TensorFlowSharp. This book will take you on a step-by-step practical journey, covering everything from the mathematical and theoretical aspects of neural networks, to building your own deep neural networks into your applications with the C# and .NET frameworks. This book begins by giving you a quick refresher of neural networks. You will learn how to build a neural network from scratch using packages such as Encog, AForge, and Accord. You will learn about various concepts and techniques, such as perceptrons, optimization algorithms, convolutional networks, and autoencoders. You will learn ways to add intelligent features to your .NET apps, such as facial and motion detection, object detection and labeling, language understanding, knowledge, and intelligent search. Throughout this book, you will be working on interesting demonstrations that will make it easier to implement complex neural networks in your enterprise applications. What you will learnUnderstand perceptrons and how to implement them in C#Learn how to train and visualize a neural network using cognitive servicesPerform image recognition for detecting and labeling objects using C# and TensorFlowSharpDetect specific image characteristics such as a face using Accord.NetDemonstrate particle swarm optimization using a simple XOR problem and EncogTrain convolutional neural networks using ConVNetSharpFind optimal parameters for your neural network functions using numeric and heuristic optimization techniques.Who this book is for This book is for Machine Learning Engineers, Data Scientists, Deep Learning Aspirants and Data Analysts who are now looking to move into advanced machine learning and deep learning with C#. Prior knowledge of machine learning and working experience with C# programming is required to take most out of this book

"This book is distinctive in that it implements nodes and links as base objects and then composes them into four different kinds of neural networks. Roger's writing is clear....The text and code are both quite readable. Overall, this book will be useful to anyone who wants to implement neural networks in C++ (and, to a lesser extent, in other object-oriented programming languages)...I recommend this book to anyone who wants to implement neural networks in C++."—D.L. Chester, Newark, Delaware in COMPUTING REVIEWSOriented-Neural Networks in C++ is a valuable tool for anyone who wants to understand, implement, or utilize neural networks. This book/disk package provides the reader with a foundation from which any neural network architecture can be constructed. The author has employed object-oriented design and object-oriented programming concepts to develop a set of foundation neural network classes, and shows how these classes can be used to implement a variety of neural network architectures with a great deal of ease and flexibility. A wealth of neural network formulas (with standardized notation), object code implementations, and examples are provided to demonstrate the object-oriented approach to neural network architectures and to facilitate the development of new neural network architectures. This is the first book to take full advantage of the reusable nature of neural network classes. Key Features * Describes how to use the classes provided to implement a variety of neural network architectures including ADALINE, Backpropagation, Self-Organizing, and BAM * Provides a set of reusable neural network classes, created in C++, capable of implementing any neural network architecture * Includes an IBM disk of the source code for the classes, which is platform independent * Includes an IBM disk with C++ programs described in the book

Leverage the power of Java and deep learning to build production-grade Computer Vision applications Key FeaturesBuild real-world Computer Vision applications using the power of neural networks Implement image classification, object detection, and face recognitionKnow best practices on effectively building and deploying deep learning models in JavaBook Description Although machine learning is an exciting world to explore, you may be shy of its theoretical aspects. As a Java developer, you will be used to telling the computer exactly what to do, instead of being shown how data is generated; this causes many developers to struggle to adapt to machine learning. The goal of this book is to walk you through the process of efficiently training machine learning and deep learning models for Computer Vision using the most up-to-date techniques. The book is designed to familiarize you with neural networks, enabling you to train them efficiently, customize existing state-of-the-art architectures, build real-world Java applications, and get great results in a short space of time. You will build real-world Computer Vision applications, ranging from a simple Java handwritten digit recognition model to real-time Java autonomous car driving systems and face recognition models. By the end of this book, you will have mastered the best practices and modern techniques needed to build advanced Computer Vision Java applications and achieve production-grade accuracy. What you will learnDiscover neural networks and their applications in Computer VisionExplore the popular Java frameworks and libraries for deep learningBuild deep neural networks in Java Implement an end-to-end image classification application in JavaPerform real-time video object detection using deep learningEnhance performance and deploy applications for productionWho this book is for This book is for data scientists, machine learning developers and deep learning practitioners with Java knowledge who want to implement machine learning and deep neural networks in the computer vision domain. You will need to have a basic knowledge of Java programming.

Learn practical uses for some of the hottest tech applications trending among technology professionals We are living in an era of digital revolution. On the horizon, many emerging digital technologies are being developed at a breathtaking speed. Whether we like it or not, whether we are ready or not, digital technologies are going to penetrate more and more, deeper and deeper, into every aspect of our lives. This is going to fundamentally change how we live, how we work, and how we socialize. Java, as a modern high-level programming language, is an excellent tool for helping us to learn these digital technologies, as well as to develop digital applications, such as IoT, AI, Cybersecurity, Blockchain and more. Practical Java Programming uses Java as a tool to help you learn these new digital technologies and to be better prepared for the future changes. Gives you a brief overview for getting started with Java Programming Dives into how you can apply your new knowledge to some of the biggest trending applications today Helps you understand how to program Java to interact with operating systems, networking, and mobile applications Shows you how Java can be used in trending tech applications such as IoT (Internet of Things), AI (Artificial Intelligence), Cybersecurity, and Blockchain Get ready to find out firsthand how Java can be used for connected home devices, healthcare, the cloud, and all the hottest tech applications.

Neural Networks

Interdisciplinary Computing in Java Programming

Neural Networks in TensorFlow.js

Artificial Intelligence with Python

Neural Smithing

Neural Network Programming with Java

Harness the hidden power of Java to build network-enabled applications with lower network traffic and faster processes About This Book Learn to deliver superior server-to-server communication through the networking channels Gain expertise of the networking features of your own applications to support various network architectures such as client/server and peer-to-peer Explore the issues that impact scalability, affect security, and allow applications to work in a heterogeneous environment Who This Book Is For Learning Network Programming with Java is oriented to developers who wish to use network technologies to enhance the utility of their applications. You should have a working knowledge of Java and an interest in learning the latest in network programming techniques using Java. No prior experience with network development or special software beyond the Java SDK is needed. Upon completion of the book, beginner and experienced developers will be able to use Java to access resources across a network and the Internet. What You Will Learn Connect to other applications using sockets Use channels and buffers to enhance communication between applications Access network services and develop client/server applications Explore the critical elements of peer-to-peer applications and current technologies available Use UDP to perform multicasting Address scalability through the use of core and advanced threading techniques Incorporate techniques into an application to make it more secure Configure and address interoperability issues to enable your applications to work in a heterogeneous environment In Detail Network-aware applications are becoming more prevalent and play an ever-increasing role in the world today. Connecting and using an Internet-based service is a frequent requirement for many applications. Java provides numerous classes that have evolved over the years to meet evolving network needs. These range from low-level socket and IP-based approaches to those encapsulated in software services. This book explores how Java supports networks, starting with the basics and then advancing to more complex topics. An overview of each relevant network technology is presented followed by detailed examples of how to use Java to support these technologies. We start with the basics of networking and then explore how Java supports the development of client/server and peer-to-peer applications. The NIO packages are examined as well as multithasking and how network applications can address practical issues such as security. A discussion on networking concepts will put many network issues into perspective and let you focus on the appropriate technology for the problem at hand. The examples used will provide a good starting point to develop similar capabilities for many of your network needs. Style and approach Each network technology's terms and concepts are introduced first. This is followed up with code examples to explain these technologies. Many of the examples are supplemented with alternate Java 8 solutions when appropriate. Knowledge of Java 8 is not necessary but these examples will help you better understand the power of Java 8.

Artificial neural networks are nonlinear mapping systems whose structure is loosely based on principles observed in the nervous systems of humans and animals. The basic idea is that massive systems of simple units linked together in appropriate ways can generate many complex and interesting behaviors. This book focuses on the subset of feedforward artificial neural networks called multilayer perceptrons (MLP). These are the mostly widely used neural networks, with applications as diverse as finance (forecasting), manufacturing (process control), and science (speech and image recognition). This book presents an extensive and practical overview of almost every aspect of MLP methodology, progressing from an initial discussion of what MLPs are and how they might be used to an in-depth examination of technical factors affecting performance. The book can be used as a tool kit by readers interested in applying networks to specific problems, yet it also presents theory and references outlining the last ten years of MLP research.

Build real-world Artificial Intelligence applications with Python to intelligently interact with the world around you About This Book Step into the amazing world of intelligent apps using this comprehensive guide Enter the world of Artificial Intelligence, explore it, and create your own applications Work through simple yet insightful examples that will get you up and running with Artificial Intelligence in no time Who This Book Is For This book is for Python developers who want to build real-world Artificial Intelligence applications. This book is friendly to Python beginners, but being familiar with Python and using it to write code will be helpful for experienced Python programmers who are looking to use Artificial Intelligence techniques in their existing technology stacks. What You Will Learn Realize different classification and regression techniques Understand the concept of clustering and how to use it to automatically segment data Sets how to build an intelligent recommender system Understand logic programming and how to use it Build automatic speech recognition systems Understand the basics of heuristic search and genetic programming Develop games using Artificial Intelligence Learn how reinforcement learning works Discover how to build intelligent applications centered on images, text, and time-series data See how to use deep learning algorithms and build applications based on it In Detail Artificial Intelligence is becoming increasingly relevant in the modern world where everything is driven by technology and data. It is used extensively across many fields such as search engines, image recognition, robotics, finance, and so on. We will explore various real-world scenarios in this book and you'll learn about various algorithms that can be used to build Artificial Intelligence applications. During the course of this book, you will find out how to make informed decisions about what algorithms to use in a given context. Starting from the basics of Artificial Intelligence, you will learn how to develop various building blocks using different data mining techniques. You will see how to implement different algorithms to get the best possible results, and will understand how to apply them to real-world scenarios. If you want to add an intelligence layer to any application that's based on images, text, stock market, or some other form of data, this exciting book on Artificial Intelligence will definitely be your guide! Style and approach This highly practical book will show you how to implement Artificial Intelligence. The book provides multiple examples enabling you to create smart applications to meet the needs of your organization. In every chapter, we explain an algorithm, implement it, and then build a smart application.

Use Java and DeepLearning4J to build robust, scalable, and highly accurate AI models from scratch Key Features Install and configure DeepLearning4J to implement deep learning models from scratch Explore recipes for developing, training, and fine-tuning your neural network models in Java Model neural networks using datasets containing images, text, and time-series data Book Description Java is one of the most widely used programming languages in the world. With this book, you will see how to perform deep learning using DeepLearning4J (DL4J) – the most popular Java library for training neural networks efficiently. This book starts by showing you how to install and configure Java and DL4J on your system. You will then gain insights into deep learning basics and use your knowledge to create a deep neural network for binary classification from scratch. As you progress, you will discover how to build a convolutional neural network (CNN) in DL4J, and understand how to construct numeric vectors from text. This deep learning book will also guide you through performing anomaly detection on unsupervised data and help you set up neural networks in distributed systems effectively. In addition to this, you will learn how to perform benchmarking in DL4J mode. Finally, you will explore benchmarking in DL4J and optimize neural networks for optimal results. By the end of this book, you will have a clear understanding of how you can use DL4J to build robust deep learning applications in Java. What you will learn Perform data normalization and wrangling using DL4J Build deep neural networks using DL4J Implement CNNs to solve image classification problems Train autoencoders to solve anomaly detection problems using DL4J Perform benchmarking and optimization to improve your model's performance Implement reinforcement learning for real-world use cases using RL4J Leverage the capabilities of DL4J in distributed systems Who this book is for If you are a data scientist, machine learning developer, or a deep learning enthusiast who wants to implement deep learning models in Java, this book is for you. Basic understanding of Java programming as well as some experience with machine learning and neural networks is required to get the most out of this book.

Intelligent Java Applications for the Internet and Intranets

Supervised Learning in Feedforward Artificial Neural Networks

The Nature of Code

An Introduction to Neural Networks

Programming Neural Networks with Encog 3 in Java

Machine Learning in Java

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)

Design, build, and deploy your own machine learning applications by leveraging key Java machine learning libraries About This Book- Develop a sound strategy to solve predictive modelling problems using the most popular machine learning Java libraries- Explore a broad variety of data processing, machine learning, and natural language processing through diagrams, source code, and real-world applications- Packed with practical advice and tips to help you get to grips with applied machine learning Who This Book Is For- If you want to learn how to use Java's machine learning libraries to gain insight from your data, this book is for you. It will get you up and running quickly and provide you with the skills you need to successfully create, customize, and deploy machine learning applications in real life. You should be familiar with Java programming and data mining concepts to make the most of this book, but no prior experience with data mining packages is necessary. What You Will Learn- Understand the basic steps of applied machine learning and how to differentiate among various machine learning approaches- Discover key Java machine learning libraries, what each library brings to the table, and what kind of problems each are able to solve- Learn how to implement classification, regression, and clustering- Develop a sustainable strategy for customer relationship management- Build a scalable recommendation engine with Apache Mahout- Apply machine learning to fraud, anomaly and outlier detection- Experiment with deep learning concepts, algorithms, and the toolbox for deep learning- Write your own activity recognition model for health applications using mobile sensors In Details the amount of data continues to grow at an almost incomprehensible rate, being able to understand and process data is becoming a key differentiator for competitive organizations. Machine learning applications are everywhere, from self-driving cars, spam detection, document search, and trading strategies, to speech recognition. This makes machine learning well-suited to the present-day era of Big Data and Data Science. The main challenge is how to transform data into actionable knowledge. Machine Learning in Java will provide you with the techniques and tools you need to quickly gain insight from complex data. You will start by learning how to apply machine learning methods to a variety of common tasks including classification, prediction, forecasting, market basket analysis, and clustering. Moving on, you will discover how to detect anomalies and fraud, and ways to perform activity recognition, image recognition, and text analysis. By the end of the book, you will explore related web resources and technologies that will help you take your learning to the next level. By applying the most effective machine learning methods to real-world problems, you will gain hands-on experience that will transform the way you think about data. Style and approach This is a practical tutorial that uses hands-on examples to step through some real-world applications of machine learning. Without shying away from the technical details, you will explore machine learning with Java libraries using clear and practical examples. You will explore how to prepare data for analysis, choose a machine learning method, and measure the success of the process.

Use Java and DeepLearning4J to build robust, scalable, and highly accurate AI models from scratch Key Features Install and configure DeepLearning4J to implement deep learning models from scratch Explore recipes for developing, training, and fine-tuning your neural network models in Java Model neural networks using datasets containing images, text, and time-series data Book Description Java is one of the most widely used programming languages in the world. With this book, you will see how to perform deep learning using DeepLearning4J (DL4J) – the most popular Java library for training neural networks efficiently. This book starts by showing you how to install and configure Java and DL4J on your system. You will then gain insights into deep learning basics and use your knowledge to create a deep neural network for binary classification from scratch. As you progress, you will discover how to build a convolutional neural network (CNN) in DL4J, and understand how to construct numeric vectors from text. This deep learning book will also guide you through performing anomaly detection on unsupervised data and help you set up neural networks in distributed systems effectively. In addition to this, you will learn how to import models from Keras and change the configuration in a pre-trained DL4J model. Finally, you will explore benchmarking in DL4J and optimize neural networks for optimal results. By the end of this book, you will have a clear understanding of how you can use DL4J to build robust deep learning applications in Java. What you will learn Perform data normalization and wrangling using DL4J Build deep neural networks using DL4J Implement CNNs to solve image classification problems Train autoencoders to solve anomaly detection problems using DL4J Perform benchmarking and optimization to improve your model's performance Implement reinforcement learning for real-world use cases using RL4J Leverage the capabilities of DL4J in distributed systems Who this book is for If you are a data scientist, machine learning developer, or a deep learning enthusiast who wants to implement deep learning models in Java, this book is for you. Basic understanding of Java programming as well as some experience with machine learning and neural networks is required to get the most out of this book.

This book is an exploration of neural networks and how to implement them in Java. First, the reader is guided so as to understand what neural networks are. You will learn how they operate. The process of learning in neural networks is very important. This is the concept which makes neural networks behave in the same manner as the brain of human beings. This process is discussed in this book. You are also guided on how to implement this in Java. The Java language is used to implement the field of artificial intelligence. This book guides you on how to implement these in Java. Recurrent neural networks, which are believed to have memory, are discussed in detail. These work in such a way that the value will be calculated based on the value obtained in the previous step. You will learn how to implement such a network in Java. Convolutional neural networks are also explored in detail. You will learn how these work as well as how to implement them in Java. The following topics are discussed in this book - Understanding Neural Networks - Learning in Neural Networks - Java Lego Robots Neural Network - Convolutional Neural Networks - Recurrent Neural Networks

Neural Networks with R

Introduction to Neural Networks with Java

Neural Networks in Finance

Hands-On Java Deep Learning for Computer Vision

A Practitioner's Approach

Java Deep Learning Projects

Build and deploy powerful neural network models using the latest Java deep learning libraries Key Features Understand DL with Java by implementing real-world projects Master implementations of various ANN models and build your own DL systems Develop applications using NLP, image classification, RL, and GPU processing Book Description Java is one of the most widely used programming languages. With the rise of deep learning, it has become a popular choice of tool among data scientists and machine learning experts. Java Deep Learning Projects starts with an overview of deep learning concepts and then delves into advanced projects. You will see how to build several projects using different deep neural network architectures such as multilayer perceptrons, Deep Belief Networks, CNN, LSTM, and Factorization Machines. You will get acquainted with popular deep and machine learning libraries for Java such as DeepLearning4J, Spark ML, and RankSys and you'll be able to use their features to build and deploy projects on distributed computing environments. You will then explore advanced domains such as transfer learn and deep reinforcement learning using the Java ecosystem, covering various real-world domains such as healthcare, NLP, image classification, and multimedia analytics with an easy-to-follow approach. Expert reviews and tips will follow every project to give you insights and hacks. By the end of this book, you will have stepped up your expertise when it comes to deep learning in Java, taking it beyond theory and be able to build your own advanced deep learning systems. What you will learn Master deep learning and neural network architectures Build real-life applications covering image classification, object detection, online trading, and multimedia analytics using DL4J and open-source APIs Train ML agents to learn from data using deep reinforcement learning Use factorization machines for advanced movie recommendations Train DL models on distributed GPUs for faster deep learning with Spark and DL4J Ease your learning experience through 69 FAQs Who this book is for If you are a data scientist, machine learning professional, or deep learning practitioner, keen to expand your knowledge by delving into the practical aspects of deep learning with Java, then this book is what you need! Get ready to build advanced deep learning models to carry out complex numerical computations. Some basic understanding of machine learning concepts and a working knowledge of Java are required.

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 economic 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. Books on computation in the marketplace tend to discuss the topic within specific fields. Many computational algorithms, however, share common roots. Great advantages emerge if numerical methodologies break the boundaries and find their uses across disciplines. Interdisciplinary Computing In Java Programming Language introduces readers of different backgrounds to the beauty of the selected algorithms. Serious quantitative researchers, writing customized codes for computation, enjoy cracking source codes as opposed to the black-box approach. Most Fortran programs, despite being significantly faster in program execution, lack built-in support for plotting and graphical user interface. This book selects Java as the platform where source codes are developed and applications are run, helping readers/users best appreciate the fun of computation. Interdisciplinary Computing In Java Programming Language is designed to meet the needs of a professional audience composed of practitioners and researchers in science and technology. This book is also suitable for senior undergraduate and graduate-level students in computer science.

Scientific Data Analysis using Jython Scripting and Java presents practical approaches for data analysis using Jython scripting based on Jython, a Java implementation of the Python language. The chapters essentially cover all aspects of data analysis, from arrays and histograms to clustering analysis, curve fitting, metadata and neural networks. A comprehensive coverage of data visualisation tools implemented in Java is also included. Written by the primary developer of the JHePWork data-analysis framework, the book provides a reliable and complete reference source laying the foundation for data-analysis applications using Java scripting. More than 250 code snippets (of around 10-20 lines each) written in Jython and Java, plus several real-life examples help the reader develop a genuine feeling for data analysis techniques and their programming implementation. This is the first data-analysis and data-mining book which is completely based on the Jython language, and opens doors to scripting using a fully multi-platform and JHeP-worked approach. Graduate students and researchers will benefit from the information presented in this book.

Implement machine learning and neural network methodologies to perform computer vision-related tasks

Artificial Neural Networks

Scientific Data Analysis using Jython Scripting and Java

Implement 10 real-world deep learning applications using DeepLearning4J and open source APIs

MATLAB Neural Network Toolbox: User's Guide

Deep Learning

Beginning where our introductory neural network programming book left off, this book introduces you to Encog. Encog allows you to focus less on the actual implementation of neural networks and focus on how to use them. Encog is an advanced neural network programming framework that allows you to create a variety of neural network architectures using the Java programming language. Neural network architectures such as feedforward/perceptrons, Hopfield, Elman, Jordan, Radial Basis Function, and Self Organizing maps are all demonstrated. This book also shows how to use Encog to train neural networks using a variety of means. Several propagation techniques, such as back propagation, resilient propagation (RPROP) and the Manhattan update rule are discussed. Additionally, training with a genetic algorithm and simulated annealing is discussed as well. You will also see how to enhance training using techniques such as pruning and hybrid training.

Develop neural network applications using the Java environment. After learning the rules involved in neural network processing, this second edition shows you how to manually process your first neural network example. The book covers the internals of front and back propagation and helps you understand the main principles of neural network processing. You also will learn how to prepare the data to be used in neural network development and you will be able to suggest various techniques of data preparation for many unconventional tasks. This book discusses the practical aspects of using Java for neural network processing. You will know how to use the Encog Java framework for processing large-scale neural network applications. Also covered is the use of neural networks for approximation of non-continuous functions. In addition to using neural networks for regression, this second edition shows you how to use neural networks for computer vision. It focuses on image recognition such as the classification of handwritten digits, input data preparation and conversion, and building the conversion program. And you will learn about topics related to the classification of handwritten digits such as neural architecture, program code, programming logic, and execution. The step-by-step approach taken in the book includes plenty of examples, diagrams, and screenshots to help you grasp the concepts quickly and easily. What You Will Learn Use Java for the development of neural network applications Prepare data for many different tasks Carry out some unusual neural network processing Use a neural network to process non-continuous functions Develop a program that recognizes handwritten digits Who This Book Is For

Intermediate machine learning and deep learning developers who are interested in switching to Java

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.

Learn the basics of analytics on big data using Java, machine learning and other big data tools About This Book Acquire real-world set of tools for building enterprise level data science applications Surpasses the barrier of other languages in data science and learn create useful object-oriented codes Extensive use of Java compliant big data tools like apache spark, Hadoop, etc. Who This Book Is For This book is for Java developers who are looking to perform data analysis in production environment. Those who wish to implement data analysis in their Big data applications will find this book helpful. What You Will Learn Start from simple analytic tasks on big data Get into more complex tasks with predictive analytics on big data using machine learning Learn real time analytic tasks Understand the concepts with examples and case studies Prepare and refine data for analysis Create charts in order to understand the data See various real-world datasets In Detail This book covers case studies such as sentiment analysis on a tweet dataset, recommendations on a movieLens dataset, customer segmentation on an ecommerce dataset, and graph analysis on actual flights dataset. This book is an end-to-end guide to implement analytic tasks on big data with Java. Java is the de facto language for major big data environments, including Hadoop. This book will teach you how to perform analytics on big data with production-friendly Java. This book basically divided into two sections. The first part is an introduction that will help the readers get acquainted with big data environments, whereas the second part will contain a hardcore discussion on all the concepts in analytics on big data. It will take you from data analysis and data visualization to the core concepts and advantages of machine learning, real-life usage of regression and classification using Naive Bayes, a deep discussion on the concepts of clustering, and a review of simple neural networks on big data using deepLearning4j or plain Java Spark code. This book is a must-have book for Java developers who want to start learning big data analytics and want to use it in the real world. Style and approach The approach of book is to deliver practical learning modules in manageable content. Each chapter is a self-contained unit of a concept in big data analytics. Book will step by step builds the competency in the area of big data analytics. Examples using real world case studies to give ideas of real applications and how to use the techniques mentioned. The examples and case studies will be shown using both theory and code.

Programming Neural Networks with Encog 2 in Java

Simple Guide on Neural Networks

C++ Neural Networks and Fuzzy Logic

Java Deep Learning Cookbook

Make Your Own Neural Network

Practical Java Programming for IoT, AI, and Blockchain

How can we capture the unpredictable evolutionary and emergent properties of nature in software? How can understanding the mathematical principles behind our physical world help us to create digital worlds? This book focuses on a range of programming strategies and techniques behind computer simulations of natural systems, from elementary concepts in mathematics and physics to more advanced algorithms that enable sophisticated visual results. Readers will progress from building a basic physics engine to creating intelligent moving objects and complex systems, setting the foundation for further experiments in generative design. Subjects covered include forces, trigonometry, fractals, cellular automata, self-organization, and genetic algorithms. The book's examples are written in Processing, an open-source language and development environment built on top of the Java programming language. On the book's website (<http://www.natureofcode.com>), the examples run in the browser via Processing's JavaScript mode.

Build smarter programs with the power of neural networks and the simplicity of Python>About This Book* Make your roots stronger in neural networks by this concept-rich yet highly practical guide, from single layer to multiple layers with the help of Python* Through this book, you will develop a strong background in neural networks, regardless of your level of previous knowledge in this subject* You will be able to implement solutions from scratch, so the whole process on foundations of neural network solution design will be paced by youWho This Book Is ForThis book is designed for novices as well as intermediate Python developers who have a statistical background and want to work with neural networks to get better results from complex data. It also contains enough food for thought for those who want to improve their skills in machine learning and deep learning.What You Will Learn* See the latest innovations in the field* Become fluent in Python to develop neural networks solutions capable of solving complex and interesting tasks* Implement neural networks step-by-step* Solve your complex computational problems with the aid of neural networks and Python* The reader will be able to set up his/her neural network with ease, according to the objective he/she wants to apply.* The reader will be able to design time series based models using RNNs in Python.* Will be able to design high level solutions with CNNs in PythonIn DetailIf you wish to solve your complex computational problem efficiently, neural networks come to the rescue. This book will teach you how to ace neural networks and solve your computational problems with Python-right from predicting to self-learning models-with ease. We start off with neural network design, then you'll build a solid foundational knowledge of how a neural network learns from data, and the principles behind it.This book cover various types of neural networks including recurrent neural networks and convoluted neural networks. You will not only learn how to train neural networks, but also see a generalization of these networks. With the help of practical examples and real-world use cases, you will learn to implement these neural networks in your applications.

The study of nonlinear dynamical systems has advanced tremendously in the last 20 years, making a big impact on science and technology. This book provides all the techniques and methods used in nonlinear dynamics. The concepts and underlying mathematics are discussed in detail. The numerical and symbolic methods are implemented in C++, SymbolicC++ and Java. Object-oriented techniques are also applied. The book contains more than 150 ready-to-run programs. The text has also been designed for a one-year course at both the junior and senior levels in nonlinear dynamics. The topics discussed in the book are part of e-learning and distance learning courses conducted by the International School for Scientific Computing, University of Johannesburg.

Neural Network Programming with Java - Second Edition

Object-Oriented Neural Networks in C++

The Nonlinear Workbook

Models and Applications

Deep Learning with JavaScript

Gaining Predictive Edge in the Market

Artificial Neural Networks with Java

Internet tools and applications frequently use artificial intelligence (AI) techniques to enable special features and reduced development time. Focusing on intelligent systems, this book provides the introductory AI material that Java programmers need to create Internet and Intranet applications including online games, search engines, and data-collection tools.

Create and unleash the power of neural networks by implementing professional Java code>About This Book* Learn to build amazing projects using neural networks including forecasting the weather and pattern recognition* Explore the Java multi-platform feature to run your personal neural networks everywhere* This step-by-step guide will help you solve real-world problems and links neural network theory to their applicationWho This Book Is ForThis book is for Java developers with basic Java programming knowledge. No previous knowledge of neural networks is required as this book covers the concepts from scratch.What You Will Learn* Get to grips with the basics of neural networks and what they are used for* Develop neural networks using hands-on examples* Explore and code the most widely-used learning algorithms to make your neural network learn from most types of data* Discover the power of neural network's unsupervised learning process to extract the intrinsic knowledge hidden behind the data* Apply the code generated in practical examples, including weather forecasting and pattern recognition* Understand how to make the best choice of learning parameters to ensure you have a more effective application* Select and split data sets into training, test, and validation, and explore validation strategies* Discover how to improve and optimize your neural networkIn DetailVast quantities of data are produced every second. In this context, neural networks become a powerful technique to extract useful knowledge from large amounts of raw, seemingly unrelated data. One of the most preferred languages for neural network programming is Java as it is easier to write code using it, and most of the most popular neural network packages around already exist for Java. This makes it a versatile programming language for neural networks.This book gives you a complete walkthrough of the process of developing basic to advanced practical examples based on neural networks with Java.You will first learn the basics of neural networks and their process of learning. We then focus on what Perceptrons are and their features. Next, you will implement self-organizing maps using the concepts you've learned. Furthermore, you will learn about some of the applications that are presented in this book such as weather forecasting, disease diagnosis, customer profiling, and characters recognition (OCR). Finally, you will learn methods to optimize and adapt neural networks in real time.All the examples generated in the book are provided in the form of illustrative source code, which merges object-oriented programming (OOP) concepts and neural network features to enhance your learning experience.Style and approachThis book adopts a step-by-step approach to neural network development and provides many hands-on examples using Java programming. Each neural network concept is explored through real-world problems and is delivered in an easy-to-comprehend manner.

Handbook of Neuroevolution Through Erlang presents both the theory behind, and the methodology of, developing a neuroevolutionary-based computational intelligence system using Erlang. With a foreword written by Joe Armstrong, this handbook offers an extensive tutorial for creating a state of the art Topology and Weight Evolving Artificial Neural Network (TWEANN) platform. In a step-by-

step format, the reader is guided from a single simulated neuron to a complete system. By following these steps, the reader will be able to use novel technology to build a TWEANN system, which can be applied to Artificial Life simulation, and Forex trading. Because of Erlang's architecture, it perfectly matches that of evolutionary and neurocomputational systems. As a programming

language, it is a concurrent, message passing paradigm which allows the developers to make full use of the multi-core & multi-cpu systems. Handbook of Neuroevolution Through Erlang explains how to leverage Erlang's features in the field of machine learning, and the system's real world applications, ranging from algorithmic financial trading to artificial life and robotics.

Encog is an advanced neural network and bot programming framework. This book focuses on using Encog to create a variety of neural network architectures using the Java programming language. Neural network architectures such as feedforward/perceptrons, Hopfield, Elman, Jordan, Radial Basis Function, and Self Organizing maps are all demonstrated. This book also shows how to use Encog to

train neural networks using a variety of means. Several propagation techniques, such as back propagation, resilient propagation (RPROP) and the Manhattan update rule are discussed. Additionally, training with a genetic algorithm and simulated annealing is discussed as well. You will also see how to enhance training using techniques such as pruning, hybrid training. Real world examples

tie the book together. Pattern recognition applications such as OCR, image and text recognition will be introduced. You will see how to apply time series and forecasting and how to financial markets. All of the Encog neural network components will be demonstrated to show how to use them in your own neural network applications.

Neural Network Programming with Python

Big Data Analytics with Java

Natural Language Processing with Java

Hands-On Neural Network Programming with C#

Tools for Building Neural Network Applications

The extensively revised and updated edition provides a logical and easy-to-follow progression through C++ programming for two of the most popular technologies for artificial intelligence--neural and fuzzy programming. The authors cover theory as well as practical examples, giving programmers a solid foundation as well as working examples with reusable code.

Create and unleash the power of neural networks by implementing professional, clean, and clear Java code>About This Book Learn to build amazing projects using neural networks including forecasting the weather and pattern recognition* Explore the Java multi-platform feature to run your personal neural networks everywhere* This step-by-step guide will help you solve real-world problems and links neural network theory to their applicationWho This Book Is ForThis book is for Java developers who want to know how to develop smarter applications using the power of neural networks. Those who deal with a lot of complex data and want to use it efficiently in their day-to-day apps will find this book quite useful. Some basic experience with statistical computations is expected.What You Will Learn* Develop an understanding of neural networks and how they can be fitted* Explore the learning process of neural networks* Build neural network applications with Java using hands-on examples* Discover the power of neural network's unsupervised learning process to extract the intrinsic knowledge hidden behind the data* Apply the code generated in practical examples, including weather forecasting and pattern recognition* Understand how to make the best choice of learning parameters to ensure you have a more effective application* Select and split data sets into training, test, and validation, and explore validation strategiesIn DetailWant to discover the current state-of-art in the field of neural networks that will let you understand and design new strategies to apply to more complex problems? This book takes you on a complete walkthrough of the process of developing basic to advanced practical examples based on neural networks with Java, giving you everything you need to stand out.You will first learn the basics of neural networks and their process of learning. We then focus on what Perceptrons are and their features. Next, you will implement self-organizing maps using practical examples. Further on, you will learn about some of the applications that are presented in this book such as weather forecasting, disease diagnosis, customer profiling, generalization, extreme machine learning, and characters recognition (OCR). Finally, you will learn methods to optimize and adapt neural networks in real time.All the examples generated in the book are provided in the form of illustrative source code, which merges object-oriented programming (OOP) concepts and neural network features to enhance your learning experience.*

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 builds 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 truly 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.