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Fundamentals of Machine Learning for Predictive Data Analytics, second edition-John D. Kelleher 2020-10-20 The second edition of a comprehensive introduction to machine learning approaches used in predictive data analytics, covering both theory and practice. Machine learning is often used to build predictive models by extracting patterns from large datasets. These models are used in predictive data analytics applications including price prediction, risk assessment, predicting customer behavior, and document classification. This introductory textbook offers a detailed and focused treatment of the most important machine learning approaches used in predictive data analytics, covering both theoretical concepts and practical applications. Technical and mathematical material is augmented with explanatory worked examples, and case studies illustrate the application of these models in the broader business context. This second edition covers recent developments in machine learning, especially in a new chapter on deep learning, and two new chapters that go beyond predictive analytics to cover unsupervised learning and reinforcement learning.

Fundamentals of Deep Learning-Nikhil Buduma 2017-05-25 With the reinvigoration of neural networks in the 2000s, deep learning has become an extremely active area of research, one that’s paving the way for modern machine learning. In this practical book, author Nikhil Buduma provides examples and clear explanations to guide you through major concepts of this complicated field. Companies such as Google, Microsoft, and Facebook are actively growing in-house deep-learning teams. For the rest of us, however, deep learning is still a pretty complex and difficult subject to grasp. If you’re familiar with Python, and have a background in calculus, along with a basic understanding of machine learning, this book will get you started. Examine the foundations of machine learning and neural networks Learn how to train feed-forward neural networks Use TensorFlow to implement your first neural network Manage problems that arise as you begin to make networks deeper Build neural networks that analyze complex images Perform effective dimensionality reduction using autoencoders Dive deep into sequence analysis to examine language Learn the fundamentals of reinforcement learning.
predictive data analytics, covering both theory and practice. Machine learning is often used to build predictive models by extracting patterns from large datasets. These models are used in predictive data analytics applications including price prediction, risk assessment, predicting customer behavior, and document classification. This introductory textbook offers a detailed and focused treatment of the most important machine learning approaches used in predictive data analytics, covering both theoretical concepts and practical applications. Technical and mathematical material is augmented with explanatory worked examples, and case studies illustrate the application of these models in the broader business context. This second edition covers recent developments in machine learning, especially in a new chapter on deep learning, and two new chapters that go beyond predictive analytics to cover unsupervised learning and reinforcement learning. The book is accessible, offering nontechnical explanations of the ideas underpinning each approach before introducing mathematical models and algorithms. It is focused and deep, providing students with detailed knowledge on core concepts, giving them a solid basis for exploring the field on their own. Both early chapters and later case studies illustrate how the process of learning predictive models fits into the broader business context. The two case studies describe specific data analytics projects through each phase of development, from formulating the business problem to implementation of the analytics solution. The book can be used as a textbook at the introductory level or as a reference for professionals.

**Fundamentals of Machine Learning**

Thomas Trappenberg 2019-11-28

Interest in machine learning is exploding worldwide, both in research and for industrial applications. Machine learning is fast becoming a fundamental part of everyday life. This book is a brief introduction to this area - exploring its importance in a range of many disciplines, from science to engineering, and even its broader impact on our society. The book is written in a style that strikes a balance between brevity of explanation, rigorous mathematical argument, and outlines principle ideas. At the same time, it provides a comprehensive overview of a variety of methods and their application within this field. This includes an introduction to Bayesian approaches to modeling, as well as deep learning. Writing small programs to apply machine learning techniques is made easy by high level programming systems, and this book shows examples in Python with the machine learning libraries 'sklearn' and 'Keras'. The first four chapters concentrate on the practical side of applying machine learning techniques. The following four chapters discuss more fundamental concepts that includes their formulation in a probabilistic context. This is followed by two more chapters on advanced models, that of recurrent neural networks and that of reinforcement learning. The book closes with a brief discussion on the impact of machine learning and AI on our society. Fundamentals of Machine Learning provides a brief and accessible introduction to this rapidly growing field, one that will appeal to students and researchers across computer science and computational neuroscience, as well as the broader cognitive sciences.

**Machine Learning Fundamentals**

Hyatt Saleh 2018-11-29

With the flexibility and features of scikit-learn and Python, build machine learning algorithms that optimize the programming process and take application performance to a whole new level Key Features Explore scikit-learn uniform API and its application into any type of model Understand the difference between supervised and unsupervised models Learn the usage of machine learning through real-world examples Book Description As machine learning algorithms become popular, new tools that optimize these algorithms are also developed. Machine Learning Fundamentals explains you how to use the syntax of scikit-learn. You'll study the difference between supervised and unsupervised models, as well as the importance of choosing the appropriate algorithm for each dataset. You'll apply unsupervised clustering algorithms over real-world datasets, to discover patterns and profiles, and explore the process to solve an unsupervised machine learning problem. The focus of the book then shifts to supervised learning algorithms. You'll learn to implement different supervised algorithms and develop neural network structures using the scikit-learn package. You'll also learn how to perform coherent result analysis to improve the performance of the algorithm by tuning hyperparameters. By the end of this book, you will have gain all the skills required to start programming machine learning algorithms. What you will learn Understand the importance of data representation Gain insights into the differences between supervised and unsupervised models Explore data using the Matplotlib library Study popular algorithms, such as k-means, Mean-Shift, and DBSCAN Measure
model performance through different metrics Implement a confusion matrix using scikit-learn Study popular algorithms, such as Naïve-Bayes, Decision Tree, and SVM Perform error analysis to improve the performance of the model Learn to build a comprehensive machine learning program Who this book is for Machine Learning Fundamentals is designed for developers who are new to the field of machine learning and want to learn how to use the scikit-learn library to develop machine learning algorithms. You must have some knowledge and experience in Python programming, but you do not need any prior knowledge of sci-kit-learn or machine learning algorithms.

**Artificial Intelligence and Machine Learning Fundamentals** - Zsolt Nagy 2018-12-12 Create AI applications in Python and lay the foundations for your career in data science Key Features Practical examples that explain key machine learning algorithms Explore neural networks in detail with interesting examples Master core AI concepts with engaging activities Book Description Machine learning and neural networks are pillars on which you can build intelligent applications. Artificial Intelligence and Machine Learning Fundamentals begins by introducing you to Python and discussing AI search algorithms. You will cover in-depth mathematical topics, such as regression and classification, illustrated by Python examples. As you make your way through the book, you will progress to advanced AI techniques and concepts, and work on real-life datasets to form decision trees and clusters. You will be introduced to neural networks, a powerful tool based on Moore’s law. By the end of this book, you will be confident when it comes to building your own AI applications with your newly acquired skills! What you will learn Understand the importance, principles, and fields of AI Implement basic artificial intelligence concepts with Python Apply regression and classification concepts to real-world problems Perform predictive analysis using decision trees and random forests Carry out clustering using the k-means and mean shift algorithms Understand the fundamentals of deep learning via practical examples Who this book is for Artificial Intelligence and Machine Learning Fundamentals is for software developers and data scientists who want to enrich their projects with machine learning. You do not need any prior experience in AI. However, it’s recommended that you have knowledge of high school-level mathematics and at least one programming language (preferably Python).

**Machine Learning Fundamentals** - Hui Jiang 2021-10-31 A coherent introduction to core concepts and deep learning techniques that are critical to academic research and real-world applications.

**Fundamentals of Pattern Recognition and Machine Learning** - Ulisses Braga-Neto 2020-09-10 Fundamentals of Pattern Recognition and Machine Learning is designed for a one or two-semester introductory course in Pattern Recognition or Machine Learning at the graduate or advanced undergraduate level. The book combines theory and practice and is suitable to the classroom and self-study. It has grown out of lecture notes and assignments that the author has developed while teaching classes on this topic for the past 13 years at Texas A&M University. The book is intended to be concise but thorough. It does not attempt an encyclopedic approach, but covers in significant detail the tools commonly used in pattern recognition and machine learning, including classification, dimensionality reduction, regression, and clustering, as well as recent popular topics such as Gaussian process regression and convolutional neural networks. In addition, the selection of topics has a few features that are unique among comparable texts: it contains an extensive chapter on classifier error estimation, as well as sections on Bayesian classification, Bayesian error estimation, separate sampling, and rank-based classification. The book is mathematically rigorous and covers the classical theorems in the area. Nevertheless, an effort is made in the book to strike a balance between theory and practice. In particular, examples with datasets from applications in bioinformatics and materials informatics are used throughout to illustrate the theory. These datasets are available from the book website to be used in end-of-chapter coding assignments based on python and scikit-learn. All plots in the text were generated using python scripts, which are also available on the book website.

**Foundations of Machine Learning, second edition** - Mehryar Mohri 2018-12-25 A new edition of a graduate-level machine learning textbook that focuses on the analysis and theory of algorithms. This book is a general introduction to machine learning that can serve as a textbook for graduate
students and a reference for researchers. It covers fundamental modern topics in machine learning while providing the theoretical basis and conceptual tools needed for the discussion and justification of algorithms. It also describes several key aspects of the application of these algorithms. The authors aim to present novel theoretical tools and concepts while giving concise proofs even for relatively advanced topics. Foundations of Machine Learning is unique in its focus on the analysis and theory of algorithms. The first four chapters lay the theoretical foundation for what follows; subsequent chapters are mostly self-contained. Topics covered include the Probably Approximately Correct (PAC) learning framework; generalization bounds based on Rademacher complexity and VC-dimension; Support Vector Machines (SVMs); kernel methods; boosting; on-line learning; multi-class classification; ranking; regression; algorithmic stability; dimensionality reduction; learning automata and languages; and reinforcement learning. Each chapter ends with a set of exercises. Appendixes provide additional material including concise probability review. This second edition offers three new chapters, on model selection, maximum entropy models, and conditional entropy models. New material in the appendixes includes a major section on Fenchel duality, expanded coverage of concentration inequalities, and an entirely new entry on information theory. More than half of the exercises are new to this edition.

**Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow** Aurélien Géron 2019-09-05 Through a series of recent breakthroughs, deep learning has boosted the entire field of machine learning. Now, even programmers who know close to nothing about this technology can use simple, efficient tools to implement programs capable of learning from data. This practical book shows you how. By using concrete examples, minimal theory, and two production-ready Python frameworks—Scikit-Learn and TensorFlow—author Aurélien Géron helps you gain an intuitive understanding of the concepts and tools for building intelligent systems. You’ll learn a range of techniques, starting with simple linear regression and progressing to deep neural networks. With exercises in each chapter to help you apply what you’ve learned, all you need is programming experience to get started. Explore the machine learning landscape, particularly neural nets Use Scikit-Learn to track an example machine-learning project end-to-end Explore several training models, including support vector machines, decision trees, random forests, and ensemble methods Use the TensorFlow library to build and train neural nets Dive into neural net architectures, including convolutional nets, recurrent nets, and deep reinforcement learning Learn techniques for training and scaling deep neural nets

**Machine Learning for Decision Makers** Patanjali Kashyap 2018-01-04 Take a deep dive into the concepts of machine learning as they apply to contemporary business and management. You will learn how machine learning techniques are used to solve fundamental and complex problems in society and industry. Machine Learning for Decision Makers serves as an excellent resource for establishing the relationship of machine learning with IoT, big data, and cognitive and cloud computing to give you an overview of how these modern areas of computing relate to each other. This book introduces a collection of the most important concepts of machine learning and sets them in context with other vital technologies that decision makers need to know about. These concepts span the process from envisioning the problem to applying machine-learning techniques to your particular situation. This discussion also provides an insight to help deploy the results to improve decision-making. The book uses case studies and jargon busting to help you grasp the theory of machine learning quickly. You’ll soon gain the big picture of machine learning and how it fits with other cutting-edge IT services. This knowledge will give you confidence in your decisions for the future of your business. What You Will Learn Discover the machine learning, big data, and cloud and cognitive computing technology stack Gain insights into machine learning concepts and practices Understand business and enterprise decision-making using machine learning Absorb machine-learning best practices Who This Book Is For Managers tasked with making key decisions who want to learn how and when machine learning and related technologies can help them.

**Fundamentals of Data Analytics** Rudolf Mathar 2020-09-15 This book introduces the basic methodologies for successful data analytics. Matrix optimization and approximation are explained in detail and extensively applied to dimensionality reduction by principal component analysis and multidimensional scaling. Diffusion maps and spectral clustering are
derived as powerful tools. The methodological overlap between data science and machine learning is emphasized by demonstrating how data science is used for classification as well as supervised and unsupervised learning.

**Mathematics for Machine Learning** - Marc Peter Deisenroth 2020-04-23
The fundamental mathematical tools needed to understand machine learning include linear algebra, analytic geometry, matrix decompositions, vector calculus, optimization, probability and statistics. These topics are traditionally taught in disparate courses, making it hard for data science or computer science students, or professionals, to efficiently learn the mathematics. This self-contained textbook bridges the gap between mathematical and machine learning texts, introducing the mathematical concepts with a minimum of prerequisites. It uses these concepts to derive four central machine learning methods: linear regression, principal component analysis, Gaussian mixture models and support vector machines. For students and others with a mathematical background, these derivations provide a starting point to machine learning texts. For those learning the mathematics for the first time, the methods help build intuition and practical experience with applying mathematical concepts. Every chapter includes worked examples and exercises to test understanding. Programming tutorials are offered on the book’s web site.

**Deep Learning Essentials** - Anurag Bhardwaj 2018-01-30
Get to grips with the essentials of deep learning by leveraging the power of Python

**Fundamentals of Machine Learning Using Python** - Euan Russano 2019-11
Fundamentals of Machine Learning discusses the basics of python, use of python in computing and provides a general outlook on machine learning. This book provides an insight into concepts such as linear regression with one variable, linear algebra, and linear regression with multiple inputs. The classification with logistics regression model, regularization, neural networks, decision trees are explained in this book. The introduction to several concepts of machine learning such as component analysis, classification using k-Nearest Algorithm, k Means Clustering, computing with Tensor flow and natural language processing.
have been explained. This book explains the fundamental concepts of machine learning.

**Understanding Machine Learning** - Shai Shalev-Shwartz 2014-05-19
Introduces machine learning and its algorithmic paradigms, explaining the principles behind automated learning approaches and the considerations underlying their usage.

**Fundamentals of Deep Learning and Computer Vision** - Nikhil Singh 2020-02-24
Master Computer Vision concepts using Deep Learning with easy-to-follow steps. This book starts with setting up a Python virtual environment with the deep learning framework TensorFlow and then introduces the fundamental concepts of TensorFlow. Before moving on to Computer Vision, you will learn about neural networks and related aspects such as loss functions, gradient descent optimization, activation functions and how backpropagation works for training multi-layer perceptrons. To understand how the Convolutional Neural Network (CNN) is used for computer vision problems, you need to learn about the basic convolution operation. You will learn how CNN is different from a multi-layer perceptron along with a thorough discussion on the different building blocks of the CNN architecture such as kernel size, stride, padding, and pooling and finally learn how to build a small CNN model. Next, you will learn about different popular CNN architectures such as AlexNet, VGGNet, Inception, and ResNets along with different object detection algorithms such as RCNN, SSD, and YOLO. The book concludes with a chapter on sequential models where you will learn about RNN, GRU, and LSTMs and their architectures and understand their applications in machine translation, image/video captioning and video classification.

The purpose of this edited volume is to provide a comprehensive overview on the fundamentals of deep learning, introduce the widely-used learning architectures and algorithms, present its latest theoretical progress, discuss the most popular deep learning platforms and data sets, and describe how many deep learning methodologies have brought great breakthroughs in various applications of text, image, video, speech and audio processing. Deep learning (DL) has been widely considered as the next generation of machine learning methodology. DL attracts much attention and also achieves great success in pattern recognition, computer vision, data mining, and knowledge discovery due to its great capability in learning high-level abstract features from vast amount of data. This new book will not only attempt to provide a general roadmap or guidance to the current deep learning methodologies, but also present the challenges and envision new perspectives which may lead to further breakthroughs in this field. This book will serve as a useful reference for senior (undergraduate or graduate) students in computer science, statistics, electrical engineering, as well as others interested in studying or exploring the potential of exploiting deep learning algorithms. It will also be of special interest to researchers in the area of AI, pattern recognition, machine learning and related areas.
alongside engineers interested in applying deep learning models in existing or new practical applications.

**Hands-on Scikit-Learn for Machine Learning Applications** - David Paper 2019-11-16 Aspiring data science professionals can learn the Scikit-Learn library along with the fundamentals of machine learning with this book. The book combines the Anaconda Python distribution with the popular Scikit-Learn library to demonstrate a wide range of supervised and unsupervised machine learning algorithms. Care is taken to walk you through the principles of machine learning through clear examples written in Python that you can try out and experiment with at home on your own machine. All applied math and programming skills required to master the content are covered in this book. In-depth knowledge of object-oriented programming is not required as working and complete examples are provided and explained. Coding examples are in-depth and complex when necessary. They are also concise, accurate, and complete, and complement the machine learning concepts introduced. Working the examples helps to build the skills necessary to understand and apply complex machine learning algorithms. Hands-on Scikit-Learn for Machine Learning Applications is an excellent starting point for those pursuing a career in machine learning. Students of this book will learn the fundamentals that are a prerequisite to competency. Readers will be exposed to the Anaconda distribution of Python that is designed specifically for data science professionals, and will build skills in the popular Scikit-Learn library that underlies many machine learning applications in the world of Python. What You’ll Learn Work with simple and complex datasets common to Scikit-Learn Manipulate data into vectors and matrices for algorithmic processing Become familiar with the Anaconda distribution used in data science Apply machine learning with Classifiers, Regressors, and Dimensionality Reduction Tune algorithms and find the best algorithms for each dataset Load data from and save to CSV, JSON, Numpy, and Pandas formats Who This Book Is For The aspiring data scientist yearning to break into machine learning through mastering the underlying fundamentals that are sometimes skipped over in the rush to be productive. Some knowledge of object-oriented programming and very basic applied linear algebra will make learning easier, although anyone can benefit from this book.

**Fundamentals of Machine Learning** - Floris Ernst 2020-07-13

**Deep Reinforcement Learning** - Hao Dong 2020-06-29 Deep reinforcement learning (DRL) is the combination of reinforcement learning (RL) and deep learning. It has been able to solve a wide range of complex decision-making tasks that were previously out of reach for a machine, and famously contributed to the success of AlphaGo. Furthermore, it opens up numerous new applications in domains such as healthcare, robotics, smart grids and finance. Divided into three main parts, this book provides a comprehensive and self-contained introduction to DRL. The first part introduces the foundations of deep learning, reinforcement learning (RL) and widely used deep RL methods and discusses their implementation. The second part covers selected DRL research topics, which are useful for those wanting to specialize in DRL research. To help readers gain a deep understanding of DRL and quickly apply the techniques in practice, the third part presents mass applications, such as the intelligent transportation system and learning to run, with detailed explanations. The book is intended for computer science students, both undergraduate and postgraduate, who would like to learn DRL from scratch, practice its implementation, and explore the research topics. It also appeals to engineers and practitioners who do not have strong machine learning background, but want to quickly understand how DRL works and use the techniques in their applications.

**Deep Learning** - Josh Patterson 2017-07-28 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
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
Walk through the fundamentals of tuning general neural networks and specific deep network architectures
Use vectorization techniques for different data types with DataVec, DL4J’s workflow tool
Learn how to use DL4J natively on Spark and Hadoop

Artificial Intelligence - Tim D. Washington 2019-02-27

What is Artificial Intelligence? Artificial intelligence is a system that tends to simulate intelligent behaviors into computer-controlled machines or digital computers. Artificial Intelligence normally gives a machine the ability to carry out tasks usually associated with intelligent beings like us. Some of these tasks include translating languages, decision-making, visual perception, and speech recognition. In simple terms, artificial intelligence is the capability of any machine to mimic intelligent human behavior. Contrary to what many may think, Artificial intelligence is not a new field of study. In fact, it is older than most millennials reading this guide now. This may make you wonder when the concept of AI really started and from whence it came. As you will learn, machine learning is going to be a big deal in the world of technology. Those who would have started using it to unlock their data will greatly benefit from it even before people realize it exists. As a smart person, you should use this book to familiarize yourself with how machine learning works and then learn how to use it to your advantage. These days, AI is associated with the high-tech companies that dominate the field. Artificial intelligence first started as an academic discipline, but it has since sunken its tendrils into the business sector. Many AI researchers have abandoned academia altogether and flocked to companies like Facebook, Microsoft, Alphabet (Google) Amazon, openAI, and so on. The said companies are all working on different machine learning algorithms and are without a doubt at the forefront of AI research. Those with advanced degrees in AI, computer science, and maths rather join the engineering teams of these companies than stay in the academia. And since they are at the bleeding edge, it is worth listening to what their leaders have to say. Some have been quiet on the concerns about AI, and others like Amazon’s Bezos have said that they aren’t worried about potential AI threats. But, other visionaries like Bill Gates, Elon Musk, and physicist Stephen Hawking have all voiced their opinions on the potential dangers of Artificial Intelligence. In January 2015, Hawking, Musk, and several other AI experts signed an open letter on artificial intelligence research, calling for increased study on the potential effects on society. The twelve-page document is entitled "Research Priorities for Robust and Beneficial Artificial Intelligence: An Open Letter". It calls for further research on new AI legislation, privacy, ethics research, and several other concerns. As described in the letter, the potential threats of artificial intelligence can fall into multiple dimensions. The good news is that the early stages of AI development that we find ourselves in are malleable. The future is ours to create, provided that proper time and care go into the non-engineering side of AI research and policy.

Book Outline:
Chapter 1 - Artificial Beings, a Brief History of the Human Psyche
Chapter 2 - Top Six AI Myths
Chapter 3 - Why AI is the New Business Degree
Chapter 4 - Understanding Machine Learning
Chapter 5 - Machine Learning Steps
Chapter 6 - Robotics
Chapter 7 - Natural Language Processing

Statistics with Julia - Yoni Nazarathy

Prognostics and Health Management of Electronics - Michael G. Pecht 2018-08-21

An indispensable guide for engineers and data scientists in design, testing, operation, manufacturing, and maintenance A road map to the current challenges and available opportunities for the research and development of Prognostics and Health Management (PHM), this important work covers all areas of electronics and explains how to: assess methods for damage estimation of components and systems due to field loading conditions assess the cost and benefits of prognostic implementations develop novel methods for in situ monitoring of products and systems in actual life-cycle conditions enable condition-based (predictive) maintenance increase system availability through an extension of maintenance cycles and/or timely repair actions; obtain knowledge of load history for future design, qualification, and root cause analysis reduce the occurrence of no fault found (NFF) subtract life-cycle costs of equipment from reduction in inspection costs, downtime, and inventory Prognostics and Health Management of Electronics also explains how to understand statistical
techniques and machine learning methods used for diagnostics and
prognostics. Using this valuable resource, electrical engineers, data
scientists, and design engineers will be able to fully grasp the synergy
between IoT, machine learning, and risk assessment.

**Machine Learning** - Mg Martin 2019-06-24 There are a lot of computers out
there that will have Machine Learning already on them, and you can even
program these computers in order to learn from the inputs that the user is
going to give it. This allows for the computer to give the results, and
sometimes, the right answers that are needed even when it is working with
a problem that is more complex. This is just one of the examples of
technology that relies on machine learning. You will find that in addition to
working on a search engine, including Google, this technology works with
some spam messages and some other applications. Inside this book you will
find this: Framing - work out the scope and look at the project as a whole
Get your data Get insights from your data Prepare your data so the
algorithms can see the data patterns Explore models and compare the best
ones Fine-tune and put your models together in a fantastic solution Present
that solution Launch it and many more... So hurry and grab your copy now
to expand and discover new things that will help you start your journey.

**The Fundamentals of Data Science: Big Data, Deep Learning, and
Machine Learning: What You Need to Know about Data Science and
why it Matters** - Vlad Sozonov 2019-11-21 Data science is no easy term to
define. While there are many definitions available that point out its
statistical or logical aspects, others focus on its machine learning impacts.
Today only, get this Amazon book for just $19.99 for a limited time.
Regularly priced at $35.99. The truth is, data science is a process that
requires an understanding of multiple fields, methods, techniques, and
more. Data science cannot be easily labeled because, when applied, it looks
different to each person, business, or organization utilizing it. While the
term may not be easy to define, what it is used for, can be used for, and
approaches to it can be more easily understood. And that is precisely what
this book aims to do. Scroll Up & Click to Buy Now! Here Is A Preview Of
What You'll Discover...In this step-by-step book: This book will not only
thoroughly go over all the skills, people, and steps involved in data science,
it will also look closely at: ● What big data is and how data science came
from it. ● How data has evolved, resulting in new methods for
understanding it. ● How data science influenced artificial intelligence. ●
How data science is used in machine learning and deep learning. ● How
data science revolutionizes the way we train machines and set up neural
networks. Data science, big data, machine learning, and deep learning tend
to intimidate people. Many believe it is too complicated or technology-
centered for them to break into these fields. This book is designed to
simplify these complex areas in a way that anyone can understand the
fundamentals. Whether you are just hearing about data science, are a
student studying it in college, or looking to expand your career, this book
has something to offer every type of data enthusiast. Order your copy today!
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Science: Big Data, Deep Learning, and Machine Learning: What you need to
know about data science and why it matters." , for a limited time discount of
only $19.99! Hurry Up!! Tags: ● data science quick ● data science strategy
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case study ● data science beginner guide

**Machine Learning for Healthcare** - Rashmi Agrawal 2020-12-09 Machine
Learning for Healthcare: Handling and Managing Data provides in-depth
information about handling and managing healthcare data through machine
learning methods. This book expresses the long-standing challenges in
healthcare informatics and provides rational explanations of how to deal
with them. Machine Learning for Healthcare: Handling and Managing Data
provides techniques on how to apply machine learning within your
organization and evaluate the efficacy, suitability, and efficiency of machine
learning applications. These are illustrated in a case study which examines
how chronic disease is being redefined through patient-led data learning
and the Internet of Things. This text offers a guided tour of machine
learning algorithms, architecture design, and applications of learning in
healthcare. Readers will discover the ethical implications of machine
learning in healthcare and the future of machine learning in population and
patient health optimization. This book can also help assist in the creation of
a machine learning model, performance evaluation, and the
operationalization of its outcomes within organizations. It may appeal to computer science/information technology professionals and researchers working in the area of machine learning, and is especially applicable to the healthcare sector. The features of this book include: A unique and complete focus on applications of machine learning in the healthcare sector. An examination of how data analysis can be done using healthcare data and bioinformatics. An investigation of how healthcare companies can leverage the tapestry of big data to discover new business values. An exploration of the concepts of machine learning, along with recent research developments in healthcare sectors.

MATLAB Deep Learning - Phil Kim 2017-06-15 Get started with MATLAB for deep learning and AI with this in-depth primer. In this book, you start with machine learning fundamentals, then move on to neural networks, deep learning, and then convolutional neural networks. In a blend of fundamentals and applications, MATLAB Deep Learning employs MATLAB as the underlying programming language and tool for the examples and case studies in this book. With this book, you'll be able to tackle some of today's real world big data, smart bots, and other complex data problems. You'll see how deep learning is a complex and more intelligent aspect of machine learning for modern smart data analysis and usage. What You'll Learn Use MATLAB for deep learning Discover neural networks and multi-layer neural networks Work with convolution and pooling layers Build a MNIST example with these layers Who This Book Is For Those who want to learn deep learning using MATLAB. Some MATLAB experience may be useful.

Deep Learning: Fundamentals, Theory and Applications - Kaizhu Huang 2019-02-15 The purpose of this edited volume is to provide a comprehensive overview on the fundamentals of deep learning, introduce the widely-used learning architectures and algorithms, present its latest theoretical progress, discuss the most popular deep learning platforms and data sets, and describe how many deep learning methodologies have brought great breakthroughs in various applications of text, image, video, speech and audio processing. Deep learning (DL) has been widely considered as the next generation of machine learning methodology. DL attracts much attention and also achieves great success in pattern recognition, computer vision, data mining, and knowledge discovery due to its great capability in learning high-level abstract features from vast amount of data. This new book will not only attempt to provide a general roadmap or guidance to the current deep learning methodologies, but also present the challenges and envision new perspectives which may lead to further breakthroughs in this field. This book will serve as a useful reference for senior (undergraduate or graduate) students in computer science, statistics, electrical engineering, as well as others interested in studying or exploring the potential of exploiting deep learning algorithms. It will also be of special interest to researchers in the area of AI, pattern recognition, machine learning and related areas, alongside engineers interested in applying deep learning models in existing or new practical applications.

Hands-On Machine Learning with R - Brad Boehmke 2019-11-07 Hands-on Machine Learning with R provides a practical and applied approach to learning and developing intuition into today’s most popular machine learning methods. This book serves as a practitioner’s guide to the machine learning process and is meant to help the reader learn to apply the machine learning stack within R, which includes using various R packages such as glmnet, h2o, ranger, xgboost, keras, and others to effectively model and gain insight from their data. The book favors a hands-on approach, providing an intuitive understanding of machine learning concepts through concrete examples and just a little bit of theory. Throughout this book, the reader will be exposed to the entire machine learning process including feature engineering, resampling, hyperparameter tuning, model evaluation, and interpretation. The reader will be exposed to powerful algorithms such as regularized regression, random forests, gradient boosting machines, deep learning, generalized low rank models, and more! By favoring a hands-on approach and using real word data, the reader will gain an intuitive understanding of the architectures and engines that drive these algorithms and packages, understand when and how to tune the various hyperparameters, and be able to interpret model results. By the end of this book, the reader should have a firm grasp of R’s machine learning stack and be able to implement a systematic approach for producing high quality modeling results. Features: · Offers a practical and applied introduction to the most popular machine learning methods. · Topics covered include
TinyML - Pete Warden 2019-12-16 Deep learning networks are getting smaller. Much smaller. The Google Assistant team can detect words with a model just 14 kilobytes in size—small enough to run on a microcontroller. With this practical book you’ll enter the field of TinyML, where deep learning and embedded systems combine to make astounding things possible with tiny devices. Pete Warden and Daniel Situnayake explain how you can train models small enough to fit into any environment. Ideal for software and hardware developers who want to build embedded systems using machine learning, this guide walks you through creating a series of TinyML projects, step-by-step. No machine learning or microcontroller experience is necessary. Build a speech recognizer, a camera that detects people, and a magic wand that responds to gestures Work with Arduino and ultra-low-power microcontrollers Learn the essentials of ML and how to train your own models Train models to understand audio, image, and accelerometer data Explore TensorFlow Lite for Microcontrollers, Google’s toolkit for TinyML Debug applications and provide safeguards for privacy and security Optimize latency, energy usage, and model and binary size


Building Machine Learning and Deep Learning Models on Google Cloud Platform - Ekaba Bisong 2019-10-13 Take a systematic approach to understanding the fundamentals of machine learning and deep learning from the ground up and how they are applied in practice. You will use this comprehensive guide for building and deploying learning models to address complex use cases while leveraging the computational resources of Google Cloud Platform. Author Ekaba Bisong shows you how machine learning tools and techniques are used to predict or classify events based on a set of interactions between variables known as features or attributes in a particular dataset. He teaches you how deep learning extends the machine learning algorithm of neural networks to learn complex tasks that are difficult for computers to perform, such as recognizing faces and understanding languages. And you will know how to leverage cloud computing to accelerate data science and machine learning deployments. Building Machine Learning and Deep Learning Models on Google Cloud Platform is divided into eight parts that cover the fundamentals of machine learning and deep learning, the concept of data science and cloud services, programming for data science using the Python stack, Google Cloud Platform (GCP) infrastructure and products, advanced analytics on GCP, and deploying end-to-end machine learning solution pipelines on GCP. What You’ll Learn Understand the principles and fundamentals of machine learning and deep learning, the algorithms, how to use them, when to use them, and how to interpret your results Know the programming concepts relevant to machine and deep learning design and development using the Python stack Build and interpret machine and deep learning models Use Google Cloud Platform tools and services to develop and deploy large-scale machine learning and deep learning products Be aware of the different facets and design choices to consider when modeling a learning problem Productionalize machine learning models into software products Who This Book Is For Beginners to the practice of data science and applied machine learning, data scientists at all levels, machine learning engineers, Google Cloud Platform data engineers/architects, and software developers

Analytical Skills for AI and Data Science - Daniel Vaughan 2020-05-21 While several market-leading companies have successfully transformed their business models by following data- and AI-driven paths, the vast majority have yet to reap the benefits. How can your business and analytics units gain a competitive advantage by capturing the full potential of this predictive revolution? This practical guide presents a battle-tested end-to-end method to help you translate business decisions into tractable prescriptive solutions using data and AI as fundamental inputs. Author Daniel Vaughan shows data scientists, analytics practitioners, and others interested in using AI to transform their businesses not only how to ask the
right questions but also how to generate value using modern AI technologies and decision-making principles. You’ll explore several use cases common to many enterprises, complete with examples you can apply when working to solve your own issues. Break business decisions into stages that can be tackled using different skills from the analytical toolbox. Identify and embrace uncertainty in decision making and protect against common human biases. Customize optimal decisions to different customers using predictive and prescriptive methods and technologies. Ask business questions that create high value through AI- and data-driven technologies.

**Deep Learning**—John D. Kelleher 2019-09-10 An accessible introduction to the artificial intelligence technology that enables computer vision, speech recognition, machine translation, and driverless cars. Deep learning is an artificial intelligence technology that enables computer vision, speech recognition in mobile phones, machine translation, AI games, driverless cars, and other applications. When we use consumer products from Google, Microsoft, Facebook, Apple, or Baidu, we are often interacting with a deep learning system. In this volume in the MIT Press Essential Knowledge series, computer scientist John Kelleher offers an accessible and concise but comprehensive introduction to the fundamental technology at the heart of the artificial intelligence revolution. Kelleher explains that deep learning enables data-driven decisions by identifying and extracting patterns from large datasets; its ability to learn from complex data makes deep learning ideally suited to take advantage of the rapid growth in big data and computational power. Kelleher also explains some of the basic concepts in deep learning, presents a history of advances in the field, and discusses the current state of the art. He describes the most important deep learning architectures, including autoencoders, recurrent neural networks, and long short-term networks, as well as such recent developments as Generative Adversarial Networks and capsule networks. He also provides a comprehensive (and comprehensible) introduction to the two fundamental algorithms in deep learning: gradient descent and backpropagation. Finally, Kelleher considers the future of deep learning—major trends, possible developments, and significant challenges.

**Machine Learning**—Kevin P. Murphy 2012-08-24 A comprehensive introduction to machine learning that uses probabilistic models and inference as a unifying approach. Today’s Web-enabled deluge of electronic data calls for automated methods of data analysis. Machine learning provides these, developing methods that can automatically detect patterns in data and then use the uncovered patterns to predict future data. This textbook offers a comprehensive and self-contained introduction to the field of machine learning, based on a unified, probabilistic approach. The coverage combines breadth and depth, offering necessary background material on such topics as probability, optimization, and linear algebra as well as discussion of recent developments in the field, including conditional random fields, L1 regularization, and deep learning. The book is written in an informal, accessible style, complete with pseudo-code for the most important algorithms. All topics are copiously illustrated with color images and worked examples drawn from such application domains as biology, text processing, computer vision, and robotics. Rather than providing a cookbook of different heuristic methods, the book stresses a principled model-based approach, often using the language of graphical models to specify models in a concise and intuitive way. Almost all the models described have been implemented in a MATLAB software package—PMTK (probabilistic modeling toolkit)—that is freely available online. The book is suitable for upper-level undergraduates with an introductory-level college math background and beginning graduate students.
Introduction to Machine Learning - Ethem Alpaydin 2014-08-29 The goal of machine learning is to program computers to use example data or past experience to solve a given problem. Many successful applications of machine learning exist already, including systems that analyze past sales data to predict customer behavior, optimize robot behavior so that a task can be completed using minimum resources, and extract knowledge from bioinformatics data. Introduction to Machine Learning is a comprehensive textbook on the subject, covering a broad array of topics not usually included in introductory machine learning texts. Subjects include supervised learning; Bayesian decision theory; parametric, semi-parametric, and nonparametric methods; multivariate analysis; hidden Markov models; reinforcement learning; kernel machines; graphical models; Bayesian estimation; and statistical testing. Machine learning is rapidly becoming a skill that computer science students must master before graduation. The third edition of Introduction to Machine Learning reflects this shift, with added support for beginners, including selected solutions for exercises and additional example data sets (with code available online). Other substantial changes include discussions of outlier detection; ranking algorithms for perceptrons and support vector machines; matrix decomposition and spectral methods; distance estimation; new kernel algorithms; deep learning in multilayered perceptrons; and the nonparametric approach to Bayesian methods. All learning algorithms are explained so that students can easily move from the equations in the book to a computer program. The book can be used by both advanced undergraduates and graduate students. It will also be of interest to professionals who are concerned with the application of machine learning methods.

Machine Learning in the AWS Cloud - Abhishek Mishra 2019-09-11 Put the power of AWS Cloud machine learning services to work in your business and commercial applications! Machine Learning in the AWS Cloud introduces readers to the machine learning (ML) capabilities of the Amazon Web Services ecosystem and provides practical examples to solve real-world regression and classification problems. While readers do not need prior ML experience, they are expected to have some knowledge of Python and a basic knowledge of Amazon Web Services. Part One introduces readers to fundamental machine learning concepts. You will learn about the types of ML systems, how they are used, and challenges you may face with ML solutions. Part Two focuses on machine learning services provided by Amazon Web Services. You’ll be introduced to the basics of cloud computing and AWS offerings in the cloud-based machine learning space. Then you’ll learn to use Amazon Machine Learning to solve a simpler class of machine learning problems, and Amazon SageMaker to solve more complex problems. • Learn techniques that allow you to preprocess data, basic feature engineering, visualizing data, and model building • Discover common neural network frameworks with Amazon SageMaker • Solve computer vision problems with Amazon Rekognition • Benefit from illustrations, source code examples, and sidebars in each chapter The book appeals to both Python developers and technical/solution architects. Developers will find concrete examples that show them how to perform common ML tasks with Python on AWS. Technical/solution architects will find useful information on the machine learning capabilities of the AWS ecosystem.