

Deep Learning With Python Machine Learning Mastery

Python Machine Learning Machine Learning and Deep Learning with Python, scikit-learn, and TensorFlow 2, 3rd Edition Packt Publishing Ltd

Start Programming Python What if you could make your own program, one that is able to learn by trial and error, or based on the information that you show it? What if you could get a program that could adapt and change based on the input of the user? And what if you were able to make all of this happen with the Python coding language, helping even beginner's work with more complicated codes? This is all possible with Python machine learning.

This guidebook is going to take some time to look at Python machine learning and all of the neat things that you are able to do with it. Machine learning is a growing field, one that a lot of programmers want to spend their time on. But even though this sounds like a complicated part of technology to work with, you will find that with the help of the Python coding language, anyone can start writing their own codes in machine learning. This guidebook is going to take a look at all of the different topics that you need to know in order to get started with Python machine learning. Some of the topics that we will explore inside include: The basics of machine learning The difference between supervised and unsupervised machine learning. Setting up your new environment in the Python language. Data preprocessing with the help of machine learning. How to use Python coding to help with linear regression. Decision trees and random

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forests. How to work with support vector regression problems. Can machine learning really help with Naïve Bayes problems? Accelerated data analysis using the Python code. And so much more! If you have been interested in learning more about machine learning, and you want to be able to learn a few of the codes that can make it happen for you, make sure to check out this guidebook to help you get started! If all of this sounds like your ideal book, then hop on over and hit now that buy button! Well, stress no more! Buy this book and also learn all... and DOWNLOAD IT NOW! ??Buy the Paperback Version of this Book and get the Kindle Book version for FREE ??

Leverage machine and deep learning models to build applications on real-time data using PySpark. This book is perfect for those who want to learn to use this language to perform exploratory data analysis and solve an array of business challenges. You'll start by reviewing PySpark fundamentals, such as Spark's core architecture, and see how to use PySpark for big data processing like data ingestion, cleaning, and transformations techniques. This is followed by building workflows for analyzing streaming data using PySpark and a comparison of various streaming platforms. You'll then see how to schedule different spark jobs using Airflow with PySpark and book examine tuning machine and deep learning models for real-time predictions. This book concludes with a discussion on graph frames and performing network analysis using graph algorithms in PySpark. All the code presented in the book will be available in Python scripts on Github. What You'll Learn

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Develop pipelines for streaming data processing using PySpark Build Machine Learning & Deep Learning models using PySpark latest offerings Use graph analytics using PySpark Create Sequence Embeddings from Text data Who This Book is For Data Scientists, machine learning and deep learning engineers who want to learn and use PySpark for real time analysis on streaming data.

??Have you come across the terms machine learning and neural networks in most articles you have recently read? Do you also want to learn how to build a machine learning model that will answer your questions within a blink of your eyes??? If you responded yes to any of the above questions, you have come to the right place. Machine learning is an incredibly dense topic. It's hard to imagine condensing it into an easily readable and digestible format. However, this book aims to do exactly that. Machine learning and artificial intelligence have been used in different machines and applications to improve the user's experience. One can also use machine learning to make data analysis and predicting the output for some data sets easy. All you need to do is choose the right algorithm, train the model and test the model before you apply it on any real-world tool. It is that simple isn't it? ??Apart from this, you will also learn more about?? ? The Different Types Of Learning Algorithm That You Can Expect To Encounter ? The Numerous Applications Of Machine Learning And Deep Learning ? The Best Practices For Picking Up Neural Networks ? What Are The Best Languages And Libraries To Work With ? The Various Problems That You Can Solve With

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Machine Learning Algorithms ? And much more... Well, you can do it faster if you use Python. This language has made it easy for any user, even an amateur, to build a strong machine learning model since it has numerous directories and libraries that make it easy for one to build a model. Do you want to know how to build a machine learning model and a neural network? So, what are you waiting for? Grab a copy of this book now!

Understand the principles and practices of machine learning and deep learning This hands-on guide lays out machine learning and deep learning techniques and technologies in a style that is approachable, using just the basic math required. Written by a pair of experts in the field, Machine Learning and Deep Learning Using Python and TensorFlow contains case studies in several industries, including banking, insurance, e-commerce, retail, and healthcare. The book shows how to utilize machine learning and deep learning functions in today's smart devices and apps. You will get download links for datasets, code, and sample projects referred to in the text. Coverage includes: Machine learning and deep learning concepts Python programming and statistics fundamentals Regression and logistic regression Decision trees Model selection and cross-validation Cluster analysis Random forests and boosting Artificial neural networks TensorFlow and Keras Deep learning hyperparameters Convolutional neural networks Recurrent neural networks and long short-term memory Imagine a world where you can make a computer program learn for itself? What if you were able to create any kind of program that you wanted, even as a beginner

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programmer, without all of the convoluted codes and other information that makes your head spin?

Solve different problems in modelling deep neural networks using Python, Tensorflow, and Keras with this practical guide About This Book Practical recipes on training different neural network models and tuning them for optimal performance Use Python frameworks like TensorFlow, Caffe, Keras, Theano for Natural Language Processing, Computer Vision, and more A hands-on guide covering the common as well as the not so common problems in deep learning using Python Who This Book Is For This book is intended for machine learning professionals who are looking to use deep learning algorithms to create real-world applications using Python. Thorough understanding of the machine learning concepts and Python libraries such as NumPy, SciPy and scikit-learn is expected. Additionally, basic knowledge in linear algebra and calculus is desired.

What You Will Learn Implement different neural network models in Python Select the best Python framework for deep learning such as PyTorch, Tensorflow, MXNet and Keras Apply tips and tricks related to neural networks internals, to boost learning performances Consolidate machine learning principles and apply them in the deep learning field Reuse and adapt Python code snippets to everyday problems Evaluate the cost/benefits and performance implication of each discussed solution In Detail Deep Learning is revolutionizing a wide range of industries. For many applications, deep learning has proven to outperform humans by making faster and more accurate predictions. This book provides a top-down and

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bottom-up approach to demonstrate deep learning solutions to real-world problems in different areas. These applications include Computer Vision, Natural Language Processing, Time Series, and Robotics. The Python Deep Learning Cookbook presents technical solutions to the issues presented, along with a detailed explanation of the solutions. Furthermore, a discussion on corresponding pros and cons of implementing the proposed solution using one of the popular frameworks like TensorFlow, PyTorch, Keras and CNTK is provided. The book includes recipes that are related to the basic concepts of neural networks. All techniques s, as well as classical networks topologies. The main purpose of this book is to provide Python programmers a detailed list of recipes to apply deep learning to common and not-so-common scenarios. Style and approach Unique blend of independent recipes arranged in the most logical manner Take your machine learning skills to the next level by mastering Deep Learning concepts and algorithms using Python. About This Book Explore and create intelligent systems using cutting-edge deep learning techniques Implement deep learning algorithms and work with revolutionary libraries in Python Get real-world examples and easy-to-follow tutorials on Theano, TensorFlow, H2O and more Who This Book Is For This book is for Data Science practitioners as well as aspirants who have a basic foundational understanding of Machine Learning concepts and some programming experience with Python. A mathematical background with a conceptual understanding of calculus and statistics is also desired. What You Will Learn Get a practical deep dive into deep

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learning algorithms Explore deep learning further with Theano, Caffe, Keras, and TensorFlow Learn about two of the most powerful techniques at the core of many practical deep learning implementations: Auto-Encoders and Restricted Boltzmann Machines Dive into Deep Belief Nets and Deep Neural Networks Discover more deep learning algorithms with Dropout and Convolutional Neural Networks Get to know device strategies so you can use deep learning algorithms and libraries in the real world In Detail With an increasing interest in AI around the world, deep learning has attracted a great deal of public attention. Every day, deep learning algorithms are used broadly across different industries. The book will give you all the practical information available on the subject, including the best practices, using real-world use cases. You will learn to recognize and extract information to increase predictive accuracy and optimize results. Starting with a quick recap of important machine learning concepts, the book will delve straight into deep learning principles using Sci-kit learn. Moving ahead, you will learn to use the latest open source libraries such as Theano, Keras, Google's TensorFlow, and H2O. Use this guide to uncover the difficulties of pattern recognition, scaling data with greater accuracy and discussing deep learning algorithms and techniques. Whether you want to dive deeper into Deep Learning, or want to investigate how to get more out of this powerful technology, you'll find everything inside. Style and approach Python Machine Learning by example follows practical hands on approach. It walks you through the key elements of Python and its powerful machine learning libraries with

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the help of real world projects.

This practical guide provides nearly 200 self-contained recipes to help you solve machine learning challenges you may encounter in your daily work. If you're comfortable with Python and its libraries, including pandas and scikit-learn, you'll be able to address specific problems such as loading data, handling text or numerical data, model selection, and dimensionality reduction and many other topics. Each recipe includes code that you can copy and paste into a toy dataset to ensure that it actually works. From there, you can insert, combine, or adapt the code to help construct your application. Recipes also include a discussion that explains the solution and provides meaningful context. This cookbook takes you beyond theory and concepts by providing the nuts and bolts you need to construct working machine learning applications. You'll find recipes for: Vectors, matrices, and arrays Handling numerical and categorical data, text, images, and dates and times Dimensionality reduction using feature extraction or feature selection Model evaluation and selection Linear and logical regression, trees and forests, and k-nearest neighbors Support vector machines (SVM), naïve Bayes, clustering, and neural networks Saving and loading trained models 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

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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 would be useful to play around with the code. It will also be useful 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 See 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,

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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.

Every other day we hear about new ways to put deep learning to good use: improved medical imaging, accurate credit card fraud detection, long range weather forecasting, and more. PyTorch puts these superpowers in your hands, providing a comfortable Python experience that gets you started quickly and then grows with you as you—and your deep learning skills—become more sophisticated. Deep Learning with PyTorch will make that journey engaging and fun. Summary Every other day we hear about new ways to put deep learning to good use: improved medical imaging, accurate credit card fraud detection, long range weather forecasting, and more. PyTorch puts these superpowers in your hands, providing a comfortable Python experience that gets you started quickly and then grows with you as you—and your deep learning skills—become more sophisticated. Deep Learning with PyTorch will make

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that journey engaging and fun. Foreword by Soumith Chintala, Cocreator of PyTorch. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the technology Although many deep learning tools use Python, the PyTorch library is truly Pythonic. Instantly familiar to anyone who knows PyData tools like NumPy and scikit-learn, PyTorch simplifies deep learning without sacrificing advanced features. It's excellent for building quick models, and it scales smoothly from laptop to enterprise. Because companies like Apple, Facebook, and JPMorgan Chase rely on PyTorch, it's a great skill to have as you expand your career options. It's easy to get started with PyTorch. It minimizes cognitive overhead without sacrificing the access to advanced features, meaning you can focus on what matters the most - building and training the latest and greatest deep learning models and contribute to making a dent in the world. PyTorch is also a snap to scale and extend, and it partners well with other Python tooling. PyTorch has been adopted by hundreds of deep learning practitioners and several first-class players like FAIR, OpenAI, FastAI and Purdue. About the book Deep Learning with PyTorch teaches you to create neural networks and deep learning systems with PyTorch. This practical book quickly gets you to work building a real-world example from scratch: a tumor image classifier. Along the way, it covers best practices for the entire DL pipeline, including the PyTorch Tensor API, loading data in Python, monitoring training, and visualizing results. After covering the basics, the book will take you on a journey through

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larger projects. The centerpiece of the book is a neural network designed for cancer detection. You'll discover ways for training networks with limited inputs and start processing data to get some results. You'll sift through the unreliable initial results and focus on how to diagnose and fix the problems in your neural network. Finally, you'll look at ways to improve your results by training with augmented data, make improvements to the model architecture, and perform other fine tuning. What's inside Training deep neural networks Implementing modules and loss functions Utilizing pretrained models from PyTorch Hub Exploring code samples in Jupyter Notebooks About the reader For Python programmers with an interest in machine learning. About the author Eli Stevens had roles from software engineer to CTO, and is currently working on machine learning in the self-driving-car industry. Luca Antiga is cofounder of an AI engineering company and an AI tech startup, as well as a former PyTorch contributor. Thomas Viehmann is a PyTorch core developer and machine learning trainer and consultant. consultant based in Munich, Germany and a PyTorch core developer. Table of Contents PART 1 - CORE PYTORCH 1 Introducing deep learning and the PyTorch Library 2 Pretrained networks 3 It starts with a tensor 4 Real-world data representation using tensors 5 The mechanics of learning 6 Using a neural network to fit the data 7 Telling birds from airplanes: Learning from images 8 Using convolutions to generalize PART 2 - LEARNING FROM IMAGES IN THE REAL WORLD: EARLY DETECTION OF LUNG CANCER 9 Using PyTorch to fight cancer 10 Combining data sources into

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a unified dataset 11 Training a classification model to detect suspected tumors 12 Improving training with metrics and augmentation 13 Using segmentation to find suspected nodules 14 End-to-end nodule analysis, and where to go next PART 3 - DEPLOYMENT 15 Deploying to production

Machine learning has become an integral part of many commercial applications and research projects, but this field is not exclusive to large companies with extensive research teams. If you use Python, even as a beginner, this book will teach you practical ways to build your own machine learning solutions. With all the data available today, machine learning applications are limited only by your imagination. You'll learn the steps necessary to create a successful machine-learning application with Python and the scikit-learn library. Authors Andreas Müller and Sarah Guido focus on the practical aspects of using machine learning algorithms, rather than the math behind them. Familiarity with the NumPy and matplotlib libraries will help you get even more from this book. With this book, you'll learn:

- Fundamental concepts and applications of machine learning
- Advantages and shortcomings of widely used machine learning algorithms
- How to represent data processed by machine learning, including which data aspects to focus on
- Advanced methods for model evaluation and parameter tuning
- The concept of pipelines for chaining models and encapsulating your workflow
- Methods for working with text data, including text-specific processing techniques
- Suggestions for improving your machine learning and data science skills

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Understand basic to advanced deep learning algorithms, the mathematical principles behind them, and their practical applications. Key Features Get up-to-speed with building your own neural networks from scratch Gain insights into the mathematical principles behind deep learning algorithms Implement popular deep learning algorithms such as CNNs, RNNs, and more using TensorFlow Book Description Deep learning is one of the most popular domains in the AI space, allowing you to develop multi-layered models of varying complexities. This book introduces you to popular deep learning algorithms--from basic to advanced--and shows you how to implement them from scratch using TensorFlow. Throughout the book, you will gain insights into each algorithm, the mathematical principles behind it, and how to implement it in the best possible manner. The book starts by explaining how you can build your own neural networks, followed by introducing you to TensorFlow, the powerful Python-based library for machine learning and deep learning. Moving on, you will get up to speed with gradient descent variants, such as NAG, AMSGrad, AdaDelta, Adam, and Nadam. The book will then provide you with insights into RNNs and LSTM and how to generate song lyrics with RNN. Next, you will master the math for convolutional and capsule networks, widely used for image recognition tasks. Then you learn how machines understand the semantics of words and documents using CBOW, skip-gram, and PV-DM. Afterward, you will explore various GANs, including InfoGAN and LSGAN, and autoencoders, such as contractive autoencoders and VAE. By the end of this

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book, you will be equipped with all the skills you need to implement deep learning in your own projects. What you will learn

- Implement basic-to-advanced deep learning algorithms
- Master the mathematics behind deep learning algorithms
- Become familiar with gradient descent and its variants, such as AMSGrad, AdaDelta, Adam, and Nadam
- Implement recurrent networks, such as RNN, LSTM, GRU, and seq2seq models
- Understand how machines interpret images using CNN and capsule networks
- Implement different types of generative adversarial network, such as CGAN, CycleGAN, and StackGAN
- Explore various types of autoencoder, such as Sparse autoencoders, DAE, CAE, and VAE

Who this book is for If you are a machine learning engineer, data scientist, AI developer, or simply want to focus on neural networks and deep learning, this book is for you. Those who are completely new to deep learning, but have some experience in machine learning and Python programming, will also find the book very helpful.

Deep learning is often viewed as the exclusive domain of math PhDs and big tech companies. But as this hands-on guide demonstrates, programmers comfortable with Python can achieve impressive results in deep learning with little math background, small amounts of data, and minimal code. How? With fastai, the first library to provide a consistent interface to the most frequently used deep learning applications. Authors Jeremy Howard and Sylvain Gugger, the creators of fastai, show you how to train a model on a wide range of tasks using fastai and PyTorch. You'll also dive progressively further into deep learning theory to gain a complete

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understanding of the algorithms behind the scenes. Train models in computer vision, natural language processing, tabular data, and collaborative filtering Learn the latest deep learning techniques that matter most in practice Improve accuracy, speed, and reliability by understanding how deep learning models work Discover how to turn your models into web applications Implement deep learning algorithms from scratch Consider the ethical implications of your work Gain insight from the foreword by PyTorch cofounder, Soumith Chintala Applied machine learning with a solid foundation in theory. Revised and expanded for TensorFlow 2, GANs, and reinforcement learning. Key Features Third edition of the bestselling, widely acclaimed Python machine learning book Clear and intuitive explanations take you deep into the theory and practice of Python machine learning Fully updated and expanded to cover TensorFlow 2, Generative Adversarial Network models, reinforcement learning, and best practices Book Description Python Machine Learning, Third Edition is a comprehensive guide to machine learning and deep learning with Python. It acts as both a step-by-step tutorial, and a reference you'll keep coming back to as you build your machine learning systems. Packed with clear explanations, visualizations, and working examples, the book covers all the essential machine learning techniques in depth. While some books teach you only to follow instructions, with this machine learning book, Raschka and Mirjalili teach the principles behind machine learning, allowing you to build models and applications for yourself. Updated for TensorFlow 2.0,

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this new third edition introduces readers to its new Keras API features, as well as the latest additions to scikit-learn. It's also expanded to cover cutting-edge reinforcement learning techniques based on deep learning, as well as an introduction to GANs. Finally, this book also explores a subfield of natural language processing (NLP) called sentiment analysis, helping you learn how to use machine learning algorithms to classify documents. This book is your companion to machine learning with Python, whether you're a Python developer new to machine learning or want to deepen your knowledge of the latest developments. What you will learn Master the frameworks, models, and techniques that enable machines to 'learn' from data Use scikit-learn for machine learning and TensorFlow for deep learning Apply machine learning to image classification, sentiment analysis, intelligent web applications, and more Build and train neural networks, GANs, and other models Discover best practices for evaluating and tuning models Predict continuous target outcomes using regression analysis Dig deeper into textual and social media data using sentiment analysis Who This Book Is For If you know some Python and you want to use machine learning and deep learning, pick up this book. Whether you want to start from scratch or extend your machine learning knowledge, this is an essential resource. Written for developers and data scientists who want to create practical machine learning and deep learning code, this book is ideal for anyone who wants to teach computers how to learn from data.

Unlock modern machine learning and deep learning

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techniques with Python by using the latest cutting-edge open source Python libraries. About This Book Second edition of the bestselling book on Machine Learning A practical approach to key frameworks in data science, machine learning, and deep learning Use the most powerful Python libraries to implement machine learning and deep learning Get to know the best practices to improve and optimize your machine learning systems and algorithms Who This Book Is For If you know some Python and you want to use machine learning and deep learning, pick up this book. Whether you want to start from scratch or extend your machine learning knowledge, this is an essential and unmissable resource. Written for developers and data scientists who want to create practical machine learning and deep learning code, this book is ideal for developers and data scientists who want to teach computers how to learn from data. What You Will Learn Understand the key frameworks in data science, machine learning, and deep learning Harness the power of the latest Python open source libraries in machine learning Explore machine learning techniques using challenging real-world data Master deep neural network implementation using the TensorFlow library Learn the mechanics of classification algorithms to implement the best tool for the job Predict continuous target outcomes using regression analysis Uncover hidden patterns and structures in data with clustering Delve deeper into textual and social media data using sentiment analysis In Detail Machine learning is eating the software world, and now deep learning is extending machine learning. Understand and work at the

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cutting edge of machine learning, neural networks, and deep learning with this second edition of Sebastian Raschka's bestselling book, Python Machine Learning. Thoroughly updated using the latest Python open source libraries, this book offers the practical knowledge and techniques you need to create and contribute to machine learning, deep learning, and modern data analysis. Fully extended and modernized, Python Machine Learning Second Edition now includes the popular TensorFlow deep learning library. The scikit-learn code has also been fully updated to include recent improvements and additions to this versatile machine learning library. Sebastian Raschka and Vahid Mirjalili's unique insight and expertise introduce you to machine learning and deep learning algorithms from scratch, and show you how to apply them to practical industry challenges using realistic and interesting examples. By the end of the book, you'll be ready to meet the new data analysis opportunities in today's world. If you've read the first edition of this book, you'll be delighted to find a new balance of classical ideas and modern insights into machine learning. Every chapter has been critically updated, and there are new chapters on key technologies. You'll be able to learn and work with TensorFlow more deeply than ever before, and get essential coverage of the Keras neural network library, along with the most recent updates to scikit-learn. Style and Approach Python Machine Learning Second Edition takes a practical, hands-on coding approach so you can learn about machine learning by coding with Python. This book moves fluently between the theoretical

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principles of machine learning and the practical details of implementation with Python.

Deep learning is the most interesting and powerful machine learning technique right now. Top deep learning libraries are available on the Python ecosystem like Theano and TensorFlow. Tap into their power in a few lines of code using Keras, the best-of-breed applied deep learning library. In this Ebook, learn exactly how to get started and apply deep learning to your own machine learning projects.

Unlock deeper insights into Machine Learning with this vital guide to cutting-edge predictive analytics

About This Book Leverage Python's most powerful open-source libraries for deep learning, data

wrangling, and data visualization Learn effective strategies and best practices to improve and

optimize machine learning systems and algorithms

Ask – and answer – tough questions of your data with robust statistical models, built for a range of

datasets Who This Book Is For If you want to find out how to use Python to start answering critical

questions of your data, pick up Python Machine Learning – whether you want to get started from

scratch or want to extend your data science knowledge, this is an essential and unmissable

resource. What You Will Learn Explore how to use different machine learning models to ask different

questions of your data Learn how to build neural networks using Keras and Theano Find out how to

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write clean and elegant Python code that will optimize the strength of your algorithms Discover how to embed your machine learning model in a web application for increased accessibility Predict continuous target outcomes using regression analysis Uncover hidden patterns and structures in data with clustering Organize data using effective pre-processing techniques Get to grips with sentiment analysis to delve deeper into textual and social media data In Detail Machine learning and predictive analytics are transforming the way businesses and other organizations operate. Being able to understand trends and patterns in complex data is critical to success, becoming one of the key strategies for unlocking growth in a challenging contemporary marketplace. Python can help you deliver key insights into your data – its unique capabilities as a language let you build sophisticated algorithms and statistical models that can reveal new perspectives and answer key questions that are vital for success. Python Machine Learning gives you access to the world of predictive analytics and demonstrates why Python is one of the world's leading data science languages. If you want to ask better questions of data, or need to improve and extend the capabilities of your machine learning systems, this practical data science book is invaluable. Covering a wide range of powerful Python libraries, including scikit-learn, Theano, and

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Keras, and featuring guidance and tips on everything from sentiment analysis to neural networks, you'll soon be able to answer some of the most important questions facing you and your organization. Style and approach Python Machine Learning connects the fundamental theoretical principles behind machine learning to their practical application in a way that focuses you on asking and answering the right questions. It walks you through the key elements of Python and its powerful machine learning libraries, while demonstrating how to get to grips with a range of statistical models.

An introduction to a broad range of topics in deep learning, covering mathematical and conceptual background, deep learning techniques used in industry, and research perspectives. “Written by three experts in the field, Deep Learning is the only comprehensive book on the subject.” —Elon Musk, cochair of OpenAI; cofounder and CEO of Tesla and SpaceX Deep learning is a form of machine learning that enables computers to learn from experience and understand the world in terms of a hierarchy of concepts. Because the computer gathers knowledge from experience, there is no need for a human computer operator to formally specify all the knowledge that the computer needs. The hierarchy of concepts allows the computer to learn complicated concepts by building them out of simpler ones; a graph of these hierarchies would be many

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layers deep. This book introduces a broad range of topics in deep learning. The text offers mathematical and conceptual background, covering relevant concepts in linear algebra, probability theory and information theory, numerical computation, and machine learning. It describes deep learning techniques used by practitioners in industry, including deep feedforward networks, regularization, optimization algorithms, convolutional networks, sequence modeling, and practical methodology; and it surveys such applications as natural language processing, speech recognition, computer vision, online recommendation systems, bioinformatics, and videogames. Finally, the book offers research perspectives, covering such theoretical topics as linear factor models, autoencoders, representation learning, structured probabilistic models, Monte Carlo methods, the partition function, approximate inference, and deep generative models. Deep Learning can be used by undergraduate or graduate students planning careers in either industry or research, and by software engineers who want to begin using deep learning in their products or platforms. A website offers supplementary material for both readers and instructors.

Unlock modern machine learning and deep learning techniques with Python by using the latest cutting-edge open source Python libraries. About This Book Second edition of the bestselling book on Machine

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Learning A practical approach to key frameworks in data science, machine learning, and deep learning Use the most powerful Python libraries to implement machine learning and deep learning Get to know the best practices to improve and optimize your machine learning systems and algorithms Who This Book Is For If you know some Python and you want to use machine learning and deep learning, pick up this book. Whether you want to start from scratch or extend your machine learning knowledge, this is an essential and unmissable resource. Written for developers and data scientists who want to create practical machine learning and deep learning code, this book is ideal for developers and data scientists who want to teach computers how to learn from data. What You Will Learn Understand the key frameworks in data science, machine learning, and deep learning Harness the power of the latest Python open source libraries in machine learning Explore machine learning techniques using challenging real-world data Master deep neural network implementation using the TensorFlow library Learn the mechanics of classification algorithms to implement the best tool for the job Predict continuous target outcomes using regression analysis Uncover hidden patterns and structures in data with clustering Delve deeper into textual and social media data using sentiment analysis In Detail Machine learning is eating the software world, and

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now deep learning is extending machine learning. Understand and work at the cutting edge of machine learning, neural networks, and deep learning with this second edition of Sebastian Raschka's bestselling book, Python Machine Learning. Thoroughly updated using the latest Python open source libraries, this book offers the practical knowledge and techniques you need to create and contribute to machine learning, deep learning, and modern data analysis. Fully extended and modernized, Python Machine Learning Second Edition now includes the popular TensorFlow deep learning library. The scikit-learn code has also been fully updated to include recent improvements and additions to this versatile machine learning library. Sebastian Raschka and Vahid Mirjalili's unique insight and expertise introduce you to machine learning and deep learning algorithms from s ...

Summary Deep Learning with Python introduces the field of deep learning using the Python language and the powerful Keras library. Written by Keras creator and Google AI researcher Francois Chollet, this book builds your understanding through intuitive explanations and practical examples. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Machine learning has made remarkable progress in recent years. We went from near-unusable speech and image recognition, to

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near-human accuracy. We went from machines that couldn't beat a serious Go player, to defeating a world champion. Behind this progress is deep learning--a combination of engineering advances, best practices, and theory that enables a wealth of previously impossible smart applications. About the Book Deep Learning with Python introduces the field of deep learning using the Python language and the powerful Keras library. Written by Keras creator and Google AI researcher Francois Chollet, this book builds your understanding through intuitive explanations and practical examples. You'll explore challenging concepts and practice with applications in computer vision, natural-language processing, and generative models. By the time you finish, you'll have the knowledge and hands-on skills to apply deep learning in your own projects. What's Inside Deep learning from first principles Setting up your own deep-learning environment Image-classification models Deep learning for text and sequences Neural style transfer, text generation, and image generation About the Reader Readers need intermediate Python skills. No previous experience with Keras, TensorFlow, or machine learning is required. About the Author Francois Chollet works on deep learning at Google in Mountain View, CA. He is the creator of the Keras deep-learning library, as well as a contributor to the TensorFlow machine-learning framework. He also does deep-learning research,

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with a focus on computer vision and the application of machine learning to formal reasoning. His papers have been published at major conferences in the field, including the Conference on Computer Vision and Pattern Recognition (CVPR), the Conference and Workshop on Neural Information Processing Systems (NIPS), the International Conference on Learning Representations (ICLR), and others.

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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

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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

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"The first edition of Deep Learning with Python is one of the best books on the subject. The second edition made it even better." - Todd Cook The bestseller revised! Deep Learning with Python, Second Edition is a comprehensive introduction to the field of deep learning using Python and the powerful Keras library. Written by Google AI researcher François Chollet, the creator of Keras, this revised edition has been updated with new chapters, new tools, and cutting-edge techniques

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drawn from the latest research. You'll build your understanding through practical examples and intuitive explanations that make the complexities of deep learning accessible and understandable. about the technology Machine learning has made remarkable progress in recent years. We've gone from near-unusable speech recognition, to near-human accuracy. From machines that couldn't beat a serious Go player, to defeating a world champion. Medical imaging diagnostics, weather forecasting, and natural language question answering have suddenly become tractable problems. Behind this progress is deep learning--a combination of engineering advances, best practices, and theory that enables a wealth of previously impossible smart applications across every industry sector about the book Deep Learning with Python introduces the field of deep learning using the Python language and the powerful Keras library. You'll learn directly from the creator of Keras, François Chollet, building your understanding through intuitive explanations and practical examples. Updated from the original bestseller with over 50% new content, this second edition includes new chapters, cutting-edge innovations, and coverage of the very latest deep learning tools. You'll explore challenging concepts and practice with applications in computer vision, natural-language processing, and generative models. By the time you finish, you'll have the

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knowledge and hands-on skills to apply deep learning in your own projects. what's inside Deep learning from first principles Image-classification, image segmentation, and object detection Deep learning for natural language processing Timeseries forecasting Neural style transfer, text generation, and image generation about the reader Readers need intermediate Python skills. No previous experience with Keras, TensorFlow, or machine learning is required. about the author François Chollet works on deep learning at Google in Mountain View, CA. He is the creator of the Keras deep-learning library, as well as a contributor to the TensorFlow machine-learning framework. He also does AI research, with a focus on abstraction and reasoning. His papers have been published at major conferences in the field, including the Conference on Computer Vision and Pattern Recognition (CVPR), the Conference and Workshop on Neural Information Processing Systems (NIPS), the International Conference on Learning Representations (ICLR), and others.

The purpose of this book is two-fold, we focus on detailed coverage of deep learning and transfer learning, comparing and contrasting the two with easy-to-follow concepts and examples. The second area of focus is on real-world examples and research problems using TensorFlow, Keras and Python ecosystem with hands-on examples.

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This friendly and accessible guide to AI theory and programming in Python requires no maths or data science background. Key Features Roll up your sleeves and start programming AI models No math, data science, or machine learning background required Packed with hands-on examples, illustrations, and clear step-by-step instructions 5 hands-on working projects put ideas into action and show step-by-step how to build intelligent software Book Description AI is changing the world – and with this book, anyone can start building intelligent software! Through his best-selling video courses, Hadelin de Ponteves has taught hundreds of thousands of people to write AI software. Now, for the first time, his hands-on, energetic approach is available as a book. Taking a graduated approach that starts with the basics before easing readers into more complicated formulas and notation, Hadelin helps you understand what you really need to build AI systems with reinforcement learning and deep learning. Five full working projects put the ideas into action, showing step-by-step how to build intelligent software using the best and easiest tools for AI programming: Google Colab Python TensorFlow Keras PyTorch AI Crash Course teaches everyone to build an AI to work in their applications. Once you've read this book, you're only limited by your imagination. What you will learn Master the key skills of deep learning, reinforcement learning, and deep reinforcement learning Understand Q-learning and deep Q-learning Learn from friendly, plain English explanations and practical activities Build fun projects, including a virtual-self-driving car Use AI to solve real-world business problems and

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win classic video games Build an intelligent, virtual robot warehouse worker Who this book is for If you want to add AI to your skillset, this book is for you. It doesn't require data science or machine learning knowledge. Just maths basics (high school level).

Imagine a world where you can make a computer program learn for itself? What if it could recognize who is in a picture or the exact websites that you want to look for when you type it into the program? What if you were able to create any kind of program that you wanted, even as a beginner programmer, without all of the convoluted codes and other information that makes your head spin? This is actually all possible. The programs that were mentioned before are all a part of machine learning. This is a breakthrough in the world of information technology, which allows the computer to learn how to behave, rather than asking the programmer to think of every single instance that may show up with their user ahead of time. it is taking over the world, and you may be using it now, without even realizing it. If you have used a search engine, worked with photo recognition, or done speech recognition devices on your phone, then you have worked with machine learning. And if you combine it with the Python programming language, it is faster, more powerful, and easier (even for beginners) to create your own programs today. Python is considered the ultimate coding language for beginners, but once you start to use it, you will never be able to tell. Many of the best programs out there use this language behind them, and if you are a beginner who is ready to learn, this is a great place to start. If you have a program in mind, or you just

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want to be able to get some programming knowledge and learn more about the power that comes behind it, then this is the guidebook for you. ??Some of the topics that we will discuss include?? ? The Fundamentals of Machine Learning, Deep learning, And Neural Networks ? How To Set Up Your Environment And Make Sure That Python, TensorFlow And Scikit-Learn Work Well For You ? How To Master Neural Network Implementation Using Different Libraries ? How Random Forest Algorithms Are Able To Help Out With Machine Learning ? How To Uncover Hidden Patterns And Structures With Clustering ? How Recurrent Neural Networks Work And When To Use ? The Importance Of Linear Classifiers And Why They Need To Be Used In Machine Learning ? And Much More! This guidebook is going to provide you with the information you need to get started with Python Machine Learning. If you have an idea for a great program, but you don't have the technical knowledge to make it happen, then this guidebook will help you get started. Machine learning has the capabilities, and Python has the ease, to help you, even as a beginner, create any product that you would like. If you want to learn more about how to make the best programs with Python Machine learning, buy the book today!

Discover powerful ways to effectively solve real-world machine learning problems using key libraries including scikit-learn, TensorFlow, and PyTorch Key Features Learn and implement machine learning algorithms in a variety of real-life scenarios Cover a range of tasks catering to supervised, unsupervised and reinforcement

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learning techniques Find easy-to-follow code solutions for tackling common and not-so-common challenges

Book Description This eagerly anticipated second edition of the popular Python Machine Learning Cookbook will enable you to adopt a fresh approach to dealing with real-world machine learning and deep learning tasks. With the help of over 100 recipes, you will learn to build powerful machine learning applications using modern libraries from the Python ecosystem. The book will also guide you on how to implement various machine learning algorithms for classification, clustering, and recommendation engines, using a recipe-based approach. With emphasis on practical solutions, dedicated sections in the book will help you to apply supervised and unsupervised learning techniques to real-world problems. Toward the concluding chapters, you will get to grips with recipes that teach you advanced techniques including reinforcement learning, deep neural networks, and automated machine learning. By the end of this book, you will be equipped with the skills you need to apply machine learning techniques and leverage the full capabilities of the Python ecosystem through real-world examples. What you will learn

- Use predictive modeling and apply it to real-world problems
- Explore data visualization techniques to interact with your data
- Learn how to build a recommendation engine
- Understand how to interact with text data and build models to analyze it
- Work with speech data and recognize spoken words using Hidden Markov Models
- Get well versed with reinforcement learning, automated ML, and transfer learning
- Work with image data and

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build systems for image recognition and biometric face recognition Use deep neural networks to build an optical character recognition system Who this book is for This book is for data scientists, machine learning developers, deep learning enthusiasts and Python programmers who want to solve real-world challenges using machine-learning techniques and algorithms. If you are facing challenges at work and want ready-to-use code solutions to cover key tasks in machine learning and the deep learning domain, then this book is what you need. Familiarity with Python programming and machine learning concepts will be useful.

Take tiny steps to enter the big world of data science through this interesting guide About This Book Learn the fundamentals of machine learning and build your own intelligent applications Master the art of building your own machine learning systems with this example-based practical guide Work with important classification and regression algorithms and other machine learning techniques Who This Book Is For This book is for anyone interested in entering the data science stream with machine learning. Basic familiarity with Python is assumed. What You Will Learn Exploit the power of Python to handle data extraction, manipulation, and exploration techniques Use Python to visualize data spread across multiple dimensions and extract useful features Dive deep into the world of analytics to predict situations correctly Implement machine learning classification and regression algorithms from scratch in Python Be amazed to see the algorithms in action Evaluate the performance of a machine learning model

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and optimize it Solve interesting real-world problems using machine learning and Python as the journey unfolds In Detail Data science and machine learning are some of the top buzzwords in the technical world today. A resurging interest in machine learning is due to the same factors that have made data mining and Bayesian analysis more popular than ever. This book is your entry point to machine learning. This book starts with an introduction to machine learning and the Python language and shows you how to complete the setup. Moving ahead, you will learn all the important concepts such as, exploratory data analysis, data preprocessing, feature extraction, data visualization and clustering, classification, regression and model performance evaluation. With the help of various projects included, you will find it intriguing to acquire the mechanics of several important machine learning algorithms – they are no more obscure as they thought. Also, you will be guided step by step to build your own models from scratch. Toward the end, you will gather a broad picture of the machine learning ecosystem and best practices of applying machine learning techniques. Through this book, you will learn to tackle data-driven problems and implement your solutions with the powerful yet simple language, Python. Interesting and easy-to-follow examples, to name some, news topic classification, spam email detection, online ad click-through prediction, stock prices forecast, will keep you glued till you reach your goal. Style and approach This book is an enticing journey that starts from the very basics and gradually picks up pace as the story unfolds. Each concept is first

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succinctly defined in the larger context of things, followed by a detailed explanation of their application. Every concept is explained with the help of a project that solves a real-world problem, and involves hands-on work—giving you a deep insight into the world of machine learning. With simple yet rich language—Python—you will understand and be able to implement the examples with ease.

This book includes 9 projects on building smart and practical AI-based systems. These projects cover solutions to different domain-specific problems in healthcare, e-commerce and more. With this book, you will apply different machine learning and deep learning techniques and learn how to build your own intelligent applications for smart ...

Practical Deep Learning teaches total beginners how to build the datasets and models needed to train neural networks for your own DL projects. If you've been curious about machine learning but didn't know where to start, this is the book you've been waiting for. Focusing on the subfield of machine learning known as deep learning, it explains core concepts and gives you the foundation you need to start building your own models. Rather than simply outlining recipes for using existing toolkits, Practical Deep Learning teaches you the why of deep learning and will inspire you to explore further. All you need is basic familiarity with computer programming and high school math—the book will cover the rest. After an introduction to Python, you'll move through key topics like how to build a good training dataset, work with the scikit-learn and Keras libraries, and evaluate your

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models' performance. You'll also learn:

- How to use classic machine learning models like k-Nearest Neighbors, Random Forests, and Support Vector Machines
- How neural networks work and how they're trained
- How to use convolutional neural networks
- How to develop a successful deep learning model from scratch

You'll conduct experiments along the way, building to a final case study that incorporates everything you've learned. The perfect introduction to this dynamic, ever-expanding field, *Practical Deep Learning* will give you the skills and confidence to dive into your own machine learning projects.

Summary *Grokking Deep Learning* teaches you to build deep learning neural networks from scratch! In his engaging style, seasoned deep learning expert Andrew Trask shows you the science under the hood, so you grok for yourself every detail of training neural networks. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications.

About the Technology Deep learning, a branch of artificial intelligence, teaches computers to learn by using neural networks, technology inspired by the human brain. Online text translation, self-driving cars, personalized product recommendations, and virtual voice assistants are just a few of the exciting modern advancements possible thanks to deep learning. About the Book *Grokking Deep Learning* teaches you to build deep learning neural networks from scratch! In his engaging style, seasoned deep learning expert Andrew Trask shows you the science under the hood, so you grok for yourself every detail of training neural networks.

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Using only Python and its math-supporting library, NumPy, you'll train your own neural networks to see and understand images, translate text into different languages, and even write like Shakespeare! When you're done, you'll be fully prepared to move on to mastering deep learning frameworks. What's inside

The science behind deep learning Building and training your own neural networks Privacy concepts, including federated learning Tips for continuing your pursuit of deep learning About the Reader For readers with high school-level math and intermediate programming skills. About the Author Andrew Trask is a PhD student at Oxford University and a research scientist at DeepMind. Previously, Andrew was a researcher and analytics product manager at Digital Reasoning, where he trained the world's largest artificial neural network and helped guide the analytics roadmap for the Synthesys cognitive computing platform. Table of Contents

Introducing deep learning: why you should learn it Fundamental concepts: how do machines learn? Introduction to neural prediction: forward propagation Introduction to neural learning: gradient descent Learning multiple weights at a time: generalizing gradient descent Building your first deep neural network: introduction to backpropagation How to picture neural networks: in your head and on paper Learning signal and ignoring noise: introduction to regularization and batching Modeling probabilities and nonlinearities: activation functions Neural learning about edges and corners: intro to convolutional neural networks Neural networks that understand language: king - man + woman == ? Neural networks that write like

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Shakespeare: recurrent layers for variable-length data
Introducing automatic optimization: let's build a deep learning framework
Learning to write like Shakespeare: long short-term memory
Deep learning on unseen data: introducing federated learning
Where to go from here: a brief guide

Discover the practical aspects of implementing deep-learning solutions using the rich Python ecosystem. This book bridges the gap between the academic state-of-the-art and the industry state-of-the-practice by introducing you to deep learning frameworks such as Keras, Theano, and Caffe. The practicalities of these frameworks is often acquired by practitioners by reading source code, manuals, and posting questions on community forums, which tends to be a slow and a painful process. Deep Learning with Python allows you to ramp up to such practical know-how in a short period of time and focus more on the domain, models, and algorithms. This book briefly covers the mathematical prerequisites and fundamentals of deep learning, making this book a good starting point for software developers who want to get started in deep learning. A brief survey of deep learning architectures is also included. Deep Learning with Python also introduces you to key concepts of automatic differentiation and GPU computation which, while not central to deep learning, are critical when it comes to conducting large scale experiments. What You Will Learn Leverage deep learning frameworks in Python namely, Keras, Theano, and Caffe Gain the fundamentals of deep learning with mathematical prerequisites Discover the practical

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considerations of large scale experiments Take deep learning models to production Who This Book Is For Software developers who want to try out deep learning as a practical solution to a particular problem. Software developers in a data science team who want to take deep learning models developed by data scientists to production.

Summary Deep Learning with Python introduces the field of deep learning using the Python language and the powerful Keras library. Written by Keras creator and Google AI researcher François Chollet, this book builds your understanding through intuitive explanations and practical examples. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Machine learning has made remarkable progress in recent years. We went from near-unusable speech and image recognition, to near-human accuracy. We went from machines that couldn't beat a serious Go player, to defeating a world champion. Behind this progress is deep learning—a combination of engineering advances, best practices, and theory that enables a wealth of previously impossible smart applications. About the Book Deep Learning with Python introduces the field of deep learning using the Python language and the powerful Keras library. Written by Keras creator and Google AI researcher François Chollet, this book builds your understanding through intuitive explanations and practical examples. You'll explore challenging concepts and practice with applications in computer vision, natural-language processing, and generative models. By the

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time you finish, you'll have the knowledge and hands-on skills to apply deep learning in your own projects. What's Inside Deep learning from first principles Setting up your own deep-learning environment Image-classification models Deep learning for text and sequences Neural style transfer, text generation, and image generation About the Reader Readers need intermediate Python skills. No previous experience with Keras, TensorFlow, or machine learning is required. About the Author François Chollet works on deep learning at Google in Mountain View, CA. He is the creator of the Keras deep-learning library, as well as a contributor to the TensorFlow machine-learning framework. He also does deep-learning research, with a focus on computer vision and the application of machine learning to formal reasoning. His papers have been published at major conferences in the field, including the Conference on Computer Vision and Pattern Recognition (CVPR), the Conference and Workshop on Neural Information Processing Systems (NIPS), the International Conference on Learning Representations (ICLR), and others. Table of Contents PART 1 - FUNDAMENTALS OF DEEP LEARNING What is deep learning? Before we begin: the mathematical building blocks of neural networks Getting started with neural networks Fundamentals of machine learning PART 2 - DEEP LEARNING IN PRACTICE Deep learning for computer vision Deep learning for text and sequences Advanced deep-learning best practices Generative deep learning Conclusions appendix A - Installing Keras and its dependencies on Ubuntu appendix B - Running Jupyter

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Why this guide is the best one for Data Scientist? Here

are the reasons: The author has explored everything about machine learning and deep learning right from the basics. A simple language has been used. Many examples have been given, both theoretically and programmatically. Screenshots showing program outputs have been added. The book is written chronologically, in a step-by-step manner. Book Objectives: The Aims and Objectives of the Book: To help you understand the basics of machine learning and deep learning.

Understand the various categories of machine learning algorithms. To help you understand how different machine learning algorithms work. You will learn how to implement various machine learning algorithms programmatically in Python. To help you learn how to use Scikit-Learn and TensorFlow Libraries in Python. To help you know how to analyze data programmatically to extract patterns, trends, and relationships between variables. Who this Book is for? Here are the target readers for this book: Anybody who is a complete beginner to machine learning in Python. Anybody who needs to advance their programming skills in Python for machine learning programming and deep learning. Professionals in data science. Professors, lecturers or tutors who are looking to find better ways to explain machine learning to their students in the simplest and

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easiest way. Students and academicians, especially those focusing on neural networks, machine learning, and deep learning. What do you need for this Book? You are required to have installed the following on your computer: Python 3.X Numpy Pandas Matplotlib The Author guides you on how to install the rest of the Python libraries that are required for machine learning and deep learning. What is inside the book: Getting Started Environment Setup Using Scikit-Learn Linear Regression with Scikit-Learn k-Nearest Neighbors Algorithm K-Means Clustering Support Vector Machines Neural Networks with Scikit-learn Random Forest Algorithm Using TensorFlow Recurrent Neural Networks with TensorFlow Linear Classifier This book will teach you machine learning classifiers using scikit-learn and tensorflow . The book provides a great overview of functions you can use to build a support vector machine, decision tree, perceptron, and k-nearest neighbors. Thanks of this book you will be able to set up a learning pipeline that handles input and output data, pre-processes it, selects meaningful features, and applies a classifier on it. This book offers a lot of insight into machine learning for both beginners, as well as for professionals, who already use some machine learning techniques. Concepts and the background of these concepts are explained clearly in this tutorial. This book shows readers how they can successfully analyze data using only two core machine learning algorithms---and how to do so using the popular Python programming language. These algorithms deal with common scenarios faced by all data analysts and data

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scientists. This book focuses on two algorithm families (linear methods and ensemble methods) that effectively predict outcomes. This type of problem covers a multitude of use cases (what ad to place on a web page, predicting prices in securities markets, detecting credit card fraud, etc.). The focus on two families gives enough room for full descriptions of the mechanisms at work in the algorithms. Then the code examples serve to illustrate the workings of the machinery with specific hackable code. The author will explain in simple terms, using no complex math, how these algorithms work, and will then show how to apply them in Python. He will also provide advice on how to select from among these algorithms, and will show how to prepare the data, and how to use the trained models in practice. The author begins with an overview of the two core algorithms, explaining the types of problems solved by each one. He then introduces a core set of Python programming techniques that can be used to apply these algorithms. The author shows various techniques for building predictive models that solve a range of problems, from simple to complex; he also shows how to measure the performance of each model to ensure you use the right one. The following chapters provide a deep dive into each of the two algorithms: penalized linear regression and ensemble methods. Chapters will show how to apply each algorithm in Python. Readers can directly use the sample code to build their own solutions.

Have you always wanted to learn deep learning but are afraid it'll be too difficult for you? This book is for you. Deep learning is a form of machine learning that

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enables computers to learn from experience and understand the world in terms of a hierarchy of concepts. Because the computer gathers knowledge from experience, there is no need for a human computer operator to formally specify all the knowledge that the computer needs. The hierarchy of concepts allows the computer to learn complicated concepts by building them out of simpler ones; a graph of these hierarchies would be many layers deep. This book introduces a broad range of topics in deep learning. **Book Description** Python Machine Learning, is a comprehensive guide to machine learning and deep learning with Python. It acts as both a step-by-step tutorial, and a reference you'll keep coming back to as you build your machine learning systems. Packed with clear explanations, visualizations, and working examples, the book covers most of the essential machine learning techniques in depth. While some books teach you only to follow instructions, with this machine learning book, this tutorial book teaches the principles behind machine learning, allowing you to build models and applications for yourself. Updated for TensorFlow, scikit-learn, Keras, and theano, this edition introduces readers to its new Keras API features, as well as the latest additions to scikit-learn. It's also expanded to cover cutting-edge reinforcement learning techniques based on deep learning, as well as an introduction to GANs. Finally, this book also explores analysis by giving some examples, helping you learn how to use machine learning algorithms to classify or predict documents output. This book is your companion to machine learning with Python, whether you're a Python developer new to

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machine learning or want to deepen your knowledge of the latest developments. What you will learn-Master the frameworks, models, and techniques that enable machines to 'learn' from data-Use scikit-learn for machine learning and TensorFlow for deep learning-Apply machine learning to classification, predict customer churning, and more-Build and train neural networks, GANs, CNN, and other models-Discover best practices for evaluating and tuning models-Predict target outcomes using optimization algorithm such as Gradient Descent algorithm analysis-Overcome challenges in deep learning algorithms by using dropout, regulation-Who This Book Is For If you know some Python and you want to use machine learning and deep learning, pick up this book. Whether you want to start from scratch or extend your machine learning knowledge, this is an essential resource. Written for developers and data scientists who want to create practical machine learning and deep learning code, this book is ideal for anyone who wants to teach computers how to learn from data.

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10. Modeling Sequential Data Using Recurrent Neural

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Networks11.GANs for Synthesizing New Data...and so much more....In every chapter, you can edit the examples online

Master the practical aspects of implementing deep learning solutions with PyTorch, using a hands-on approach to understanding both theory and practice. This updated edition will prepare you for applying deep learning to real world problems with a sound theoretical foundation and practical know-how with PyTorch, a platform developed by Facebook's Artificial Intelligence Research Group. You'll start with a perspective on how and why deep learning with PyTorch has emerged as a path-breaking framework with a set of tools and techniques to solve real-world problems. Next, the book will ground you with the mathematical fundamentals of linear algebra, vector calculus, probability and optimization. Having established this foundation, you'll move on to key components and functionality of PyTorch including layers, loss functions and optimization algorithms. You'll also gain an understanding of Graphical Processing Unit (GPU) based computation, which is essential for training deep learning models. All the key architectures in deep learning are covered, including feedforward networks, convolution neural networks, recurrent neural networks, long short-term memory networks, autoencoders and generative adversarial networks. Backed by a number of tricks of the trade for training and optimizing deep learning models, this edition of Deep Learning with Python explains the best practices in taking these models to production with PyTorch. What You'll Learn Review

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machine learning fundamentals such as overfitting, underfitting, and regularization. Understand deep learning fundamentals such as feed-forward networks, convolution neural networks, recurrent neural networks, automatic differentiation, and stochastic gradient descent. Apply in-depth linear algebra with PyTorch Explore PyTorch fundamentals and its building blocks Work with tuning and optimizing models Who This Book Is For Beginners with a working knowledge of Python who want to understand Deep Learning in a practical, hands-on manner.

Master the essential skills needed to recognize and solve complex problems with machine learning and deep learning. Using real-world examples that leverage the popular Python machine learning ecosystem, this book is your perfect companion for learning the art and science of machine learning to become a successful practitioner. The concepts, techniques, tools, frameworks, and methodologies used in this book will teach you how to think, design, build, and execute machine learning systems and projects successfully. Practical Machine Learning with Python follows a structured and comprehensive three-tiered approach packed with hands-on examples and code. Part 1 focuses on understanding machine learning concepts and tools. This includes machine learning basics with a broad overview of algorithms, techniques, concepts and applications, followed by a tour of the entire Python machine learning ecosystem. Brief guides for useful machine learning tools, libraries and frameworks are also covered. Part 2 details standard machine learning pipelines, with an

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emphasis on data processing analysis, feature engineering, and modeling. You will learn how to process, wrangle, summarize and visualize data in its various forms. Feature engineering and selection methodologies will be covered in detail with real-world datasets followed by model building, tuning, interpretation and deployment. Part 3 explores multiple real-world case studies spanning diverse domains and industries like retail, transportation, movies, music, marketing, computer vision and finance. For each case study, you will learn the application of various machine learning techniques and methods. The hands-on examples will help you become familiar with state-of-the-art machine learning tools and techniques and understand what algorithms are best suited for any problem. Practical Machine Learning with Python will empower you to start solving your own problems with machine learning today! What You'll Learn Execute end-to-end machine learning projects and systems Implement hands-on examples with industry standard, open source, robust machine learning tools and frameworks Review case studies depicting applications of machine learning and deep learning on diverse domains and industries Apply a wide range of machine learning models including regression, classification, and clustering. Understand and apply the latest models and methodologies from deep learning including CNNs, RNNs, LSTMs and transfer learning. Who This Book Is For IT professionals, analysts, developers, data scientists, engineers, graduate students

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