Machine Learning Avec Python

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Deep Learning with Python Francois Chollet 2017-11-30 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 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 notebooks on an EC2 GPU instance

Introduction to Machine Learning with Python Andreas C. Müller 2016-09-26 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

Practical Machine Learning with Python Dipanjan Sarkar 2017-12-20 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 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

Data Science : fondamentaux et études de cas Michel Lutz 2015-10-15 Nous vivons une époque très excitante, qui ramène l'analyse de données et les méthodes quantitatives au coeur de la société.

L'aboutissement de nombreux projets de recherche, la puissance de calcul informatique disponible et des données à profusion permettent aujourd'hui d'incroyables réalisations, grâce au travail des data scientists. Un livre de référence pour les data scientists La data science est l'art de traduire des problèmes industriels, sociaux, scientifiques, ou de toute autre nature, en problèmes de modélisation quantitative, pouvant être résolus par des algorithmes de traitement de données. Cela passe par une réflexion structurée, devant faire en sorte que se rencontrent problèmes humains, outils techniques/informatiques et méthodes statistiques/algorithmiques. Chaque projet de data science est une petite aventure, qui nécessite de partir d'un problème opérationnel souvent flou, à une réponse formelle et précise, qui aura des conséquences réelles sur le quotidien d'un nombre plus ou moins important de personnes. Éric Biernat et Michel Lutz proposent de vous guider dans cette aventure. Ils vous feront visiter les vastes espaces de la data science moderne, de plus en plus présente dans notre société et qui fait tant parler d'elle, parfois par l'intermédiaire d'un sujet qui lui est corollaire, les big data. Des études de cas pour devenir kaggle master Loin des grands discours abstraits, les auteurs vous feront découvrir, claviers à la main, les pratiques de leur métier de data scientist chez OCTO Technology, l'un des leaders français du domaine. Et vous mettrez également la main à la pâte : avec juste ce qu'il faut de théorie pour comprendre ce qu'impliquent les méthodes mathématiques utilisées, mais surtout avec votre ordinateur personnel, quelques logiciels gratuits et puissants, ainsi qu'un peu de réflexion, vous allez participer activement à cette passionnante exploration ! À qui s'adresse cet ouvrage ? Aux développeurs, statisticiens, étudiants et chefs de projets ayant à résoudre des problèmes de data science. Aux data scientists, mais aussi à toute personne curieuse d'avoir une vue d'ensemble de l'état de l'art du machine learning.

Machine Learning Algorithms From Scratch with Python Jason Brownlee 2016-11-16 You must understand algorithms to get good at machine learning. The problem is that they are only ever explained using Math. No longer. In this Ebook, finally cut through the math and learn exactly how machine learning algorithms work. Using clear explanations, simple pure Python code (no libraries!) and step-by-step tutorials you will discover how to load and prepare data, evaluate model skill, and implement a suite of linear, nonlinear and ensemble machine learning algorithms from scratch.

Natural Language Processing with Python Steven Bird 2009-06-12 This book offers a highly accessible introduction to natural language processing, the field that supports a variety of language technologies, from predictive text and email filtering to automatic summarization and translation. With it, you'll learn how to write Python programs that work with large collections of unstructured text. You'll access richly annotated datasets using a comprehensive range of linguistic data structures, and you'll understand the main algorithms for analyzing the content and structure of written communication. Packed with examples and exercises, Natural Language Processing with Python will help you: Extract information from unstructured text, either to guess the topic or identify "named entities" Analyze linguistic structure in text, including parsing and semantic analysis Access popular linguistic databases, including WordNet and treebanks Integrate techniques drawn from fields as diverse as linguistics and artificial intelligence This book will help you gain practical skills in natural language processing using the Python programming language and the Natural Language Toolkit (NLTK) open source library. If you're interested in developing web applications, analyzing multilingual news sources, or documenting endangered languages -- or if you're simply curious to have a programmer's perspective on how human language works -- you'll find Natural Language Processing with Python both fascinating and immensely useful.

Machine Learning with Python Abhishek Vijayvargia 2018-03-01 Providing code examples in python, this book introduces the concepts of machine learning with mathematical explanations and programming fundamentals. --

Ensemble Learning Algorithms With Python Jason Brownlee 2021-04-26 Predictive performance is the most important concern on many classification and regression problems. Ensemble learning algorithms combine the predictions from multiple models and are designed to perform better than any contributing ensemble member. Using clear explanations, standard Python libraries, and step-by-step tutorial lessons, you will discover how to confidently and effectively improve predictive modeling performance using ensemble algorithms.

Le Machine learning avec Python Andreas-C Müller 2018-02-15 Vous aussi participez à la révolution qui ramène l'intelligence artificielle au coeur de notre société, grace aux data scientists. La data science

consiste à traduire des problèmes de toute autre nature, en problèmes de modélisation quantitative, résolus par des algorithmes de traitement. Ce livre se présente comme une référence pour tous les développeurs, statisticiens ou chefs de projets ayant à résoudre des problèmes liés à la data science. Au programme : Pourquoi utiliser le machine learning Les différentes versions de Python L'apprentissage non supervisé et le préprocessing Représenter les données Processus de validation Algorithmes, chaînes et pipeline Travailler avec des données de type texte Du prototype à la production

Mastering Machine Learning with scikit-learn Gavin Hackeling 2017-07-24 Use scikit-learn to apply machine learning to real-world problems About This Book Master popular machine learning models including k-nearest neighbors, random forests, logistic regression, k-means, naive Bayes, and artificial neural networks Learn how to build and evaluate performance of efficient models using scikit-learn Practical guide to master your basics and learn from real life applications of machine learning Who This Book Is For This book is intended for software engineers who want to understand how common machine learning algorithms work and develop an intuition for how to use them, and for data scientists who want to learn about the scikit-learn API. Familiarity with machine learning fundamentals and Python are helpful, but not required. What You Will Learn Review fundamental concepts such as bias and variance Extract features from categorical variables, text, and images Predict the values of continuous variables using linear regression and K Nearest Neighbors Classify documents and images using logistic regression and support vector machines Create ensembles of estimators using bagging and boosting techniques Discover hidden structures in data using K-Means clustering Evaluate the performance of machine learning systems in common tasks In Detail Machine learning is the buzzword bringing computer science and statistics together to build smart and efficient models. Using powerful algorithms and techniques offered by machine learning you can automate any analytical model. This book examines a variety of machine learning models including popular machine learning algorithms such as k-nearest neighbors, logistic regression, naive Bayes, k-means, decision trees, and artificial neural networks. It discusses data preprocessing, hyperparameter optimization, and ensemble methods. You will build systems that classify documents, recognize images, detect ads, and more. You will learn to use scikit-learn's API to extract features from categorical variables, text and images; evaluate model performance, and develop an intuition for how to improve your model's performance. By the end of this book, you will master all required concepts of scikit-

learn to build efficient models at work to carry out advanced tasks with the practical approach. Style and approach This book is motivated by the belief that you do not understand something until you can describe it simply. Work through toy problems to develop your understanding of the learning algorithms and models, then apply your learnings to real-life problems.

Interpretable Machine Learning Christoph Molnar 2019

Python Machine Learning Wei-Meng Lee 2019-04-04 Python makes machine learning easy for beginners and experienced developers With computing power increasing exponentially and costs decreasing at the same time, there is no better time to learn machine learning using Python. Machine learning tasks that once required enormous processing power are now possible on desktop machines. However, machine learning is not for the faint of heart—it requires a good foundation in statistics, as well as programming knowledge. Python Machine Learning will help coders of all levels master one of the most in-demand programming skillsets in use today. Readers will get started by following fundamental topics such as an introduction to Machine Learning and Data Science. For each learning algorithm, readers will use a real-life scenario to show how Python is used to solve the problem at hand. • Python data science—manipulating data and data visualization • Data cleansing • Understanding Machine learning algorithms • Supervised learning algorithms • Unsupervised learning algorithms • Deploying machine learning models Python Machine Learning is essential reading for students, developers, or anyone with a keen interest in taking their coding skills to the next level.

Deep Learning en Action Josh Patterson 2018 Plongez au coeur du Deep Learning Ce livre a été écrit pour tous ceux qui souhaitent s'initier au Deep Learning (apprentissage profond). Il est la suite logique du titre "Le Machine learning avec Python" paru en février 2018. Le Deep Learning est une technologie nouvelle qui évolue très rapidement. Ce livre en présente les bases principales de cette technologie. Au coeur de celle-ci on trouve les réseaux de neurones profonds, permettant de modéliser tous types de données et les réseaux de convolution, capables de traiter des images. Et enfin, cette technologie de plus en plus utilisée dans les applications d'intelligence artificielle introduit le notion de Reinforcement Learning (apprentissage par renforcement) qui permet d'optimiser les prises de décision par exemple pour le

fonctionnement d'un robot. Au programme : La génèse du Deep Learning Les résaux de neuronnes Les bases des réseaux de type Deep learning L'architecture réseau Créer un réseau type Adapter le réseau à des besoins propres Les architectures spécifiques La vectorisation Le Deep Learning et DL4J sur Spark Au coeur de l'intelligence artificielle RL4J et Reinforcement Learning.

Deep Learning with PyTorch Luca Pietro Giovanni Antiga 2020-07-01 “We finally have the definitive treatise on PyTorch! It covers the basics and abstractions in great detail. I hope this book becomes your extended reference document.” —Soumith Chintala, co-creator of PyTorch Key Features Written by PyTorch’s creator and key contributors Develop deep learning models in a familiar Pythonic way Use PyTorch to build an image classifier for cancer detection Diagnose problems with your neural network and improve training with data augmentation Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About The Book 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. Instantly familiar to anyone who knows Python data tools like NumPy and Scikit-learn, PyTorch simplifies deep learning without sacrificing advanced features. It’s great for building quick models, and it scales smoothly from laptop to enterprise. Deep Learning with PyTorch teaches you to create deep learning and neural network systems with PyTorch. This practical book gets you to work right away building a tumor image classifier from scratch. After covering the basics, you’ll learn best practices for the entire deep learning pipeline, tackling advanced projects as your PyTorch skills become more sophisticated. All code samples are easy to explore in downloadable Jupyter notebooks. What You Will Learn Understanding deep learning data structures such as tensors and neural networks Best practices for the PyTorch Tensor API, loading data in Python, and visualizing results Implementing modules and loss functions Utilizing pretrained models from PyTorch Hub Methods for training networks with limited inputs Sifting through unreliable results to diagnose and fix problems in your neural network Improve your results with augmented data, better model architecture, and fine tuning This Book Is Written For For Python programmers with an interest in machine learning. No experience with PyTorch or other deep learning frameworks is required. About The Authors Eli Stevens has worked in Silicon Valley for the past 15 years as a software engineer, and the past 7 years as Chief Technical Officer of a startup making medical device software. Luca Antiga is co-founder

and CEO of an AI engineering company located in Bergamo, Italy, and a regular contributor to PyTorch. Thomas Viehmann is a Machine Learning and PyTorch speciality trainer and 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 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

Python Reinforcement Learning Projects Sean Saito 2018-09-29 Implement state-of-the-art deep reinforcement learning algorithms using Python and its powerful libraries Key FeaturesImplement Q-learning and Markov models with Python and OpenAIExplore the power of TensorFlow to build self-learning modelsEight AI projects to gain confidence in building self-trained applicationsBook Description Reinforcement learning is one of the most exciting and rapidly growing fields in machine learning. This is due to the many novel algorithms developed and incredible results published in recent years. In this book, you will learn about the core concepts of RL including Q-learning, policy gradients, Monte Carlo processes, and several deep reinforcement learning algorithms. As you make your way through the book, you'll work on projects with datasets of various modalities including image, text, and video. You will gain experience in several domains, including gaming, image processing, and physical simulations. You'll explore technologies such as TensorFlow and OpenAI Gym to implement deep learning reinforcement learning algorithms that also predict stock prices, generate natural language, and even build other neural networks. By the end of this book, you will have hands-on experience with eight reinforcement learning projects, each addressing different topics and/or algorithms. We hope these practical exercises will provide you with better intuition and insight about the field of reinforcement learning and how to apply its algorithms to various problems in real life. What you will learnTrain and evaluate neural networks built using TensorFlow for RLUse RL algorithms in Python and TensorFlow to solve CartPole balancingCreate

deep reinforcement learning algorithms to play Atari gamesDeploy RL algorithms using OpenAI UniverseDevelop an agent to chat with humans Implement basic actor-critic algorithms for continuous controlApply advanced deep RL algorithms to games such as MinecraftAutogenerate an image classifier using RLWho this book is for Python Reinforcement Learning Projects is for data analysts, data scientists, and machine learning professionals, who have working knowledge of machine learning techniques and are looking to build better performing, automated, and optimized deep learning models. Individuals who want to work on self-learning model projects will also find this book useful.

Artificial Intelligence with Python Prateek Joshi 2017-01-27 Build real-world Artificial Intelligence applications with Python to intelligently interact with the world around you About This Book Step into the amazing world of intelligent apps using this comprehensive guide Enter the world of Artificial Intelligence, explore it, and create your own applications Work through simple yet insightful examples that will get you up and running with Artificial Intelligence in no time Who This Book Is For This book is for Python developers who want to build real-world Artificial Intelligence applications. This book is friendly to Python beginners, but being familiar with Python 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, 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.

Python Machine Learning Sebastian Raschka 2015-09-23 Unlock deeper insights into Machine Leaning 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 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 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.

Python for Data Analysis Wes McKinney 2017-09-25 Get complete instructions for manipulating, processing, cleaning, and crunching datasets in Python. Updated for Python 3.6, the second edition of this hands-on guide is packed with practical case studies that show you how to solve a broad set of data analysis problems effectively. You'll learn the latest versions of pandas, NumPy, IPython, and Jupyter in the process. Written by Wes McKinney, the creator of the Python pandas project, this book is a practical, modern introduction to data science tools in Python. It's ideal for analysts new to Python and for Python programmers new to data science and scientific computing. Data files and related material are available on GitHub. Use the IPython shell and Jupyter notebook for exploratory computing Learn basic and advanced features in NumPy (Numerical Python) Get started with data analysis tools in the pandas library Use flexible tools to load, clean, transform, merge, and reshape data Create informative visualizations with matplotlib Apply the pandas groupby facility to slice, dice, and summarize datasets Analyze and manipulate regular and irregular time series data Learn how to solve real-world data analysis problems with thorough, detailed examples

Machine Learning Stephen Marsland 2011-03-23 Traditional books on machine learning can be divided into two groups- those aimed at advanced undergraduates or early postgraduates with reasonable mathematical knowledge and those that are primers on how to code algorithms. The field is ready for a text that not only demonstrates how to use the algorithms that make up machine learning methods, but

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

Deep Learning for Coders with fastai and PyTorch Jeremy Howard 2020-06-29 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 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 Text Analysis with Python Benjamin Bengfort 2018-06-11 From news and speeches to informal

chatter on social media, natural language is one of the richest and most underutilized sources of data. Not only does it come in a constant stream, always changing and adapting in context; it also contains information that is not conveyed by traditional data sources. The key to unlocking natural language is through the creative application of text analytics. This practical book presents a data scientist's approach to building language-aware products with applied machine learning. You'll learn robust, repeatable, and scalable techniques for text analysis with Python, including contextual and linguistic feature engineering, vectorization, classification, topic modeling, entity resolution, graph analysis, and visual steering. By the end of the book, you'll be equipped with practical methods to solve any number of complex real-world problems. Preprocess and vectorize text into high-dimensional feature representations Perform document classification and topic modeling Steer the model selection process with visual diagnostics Extract key phrases, named entities, and graph structures to reason about data in text Build a dialog framework to enable chatbots and language-driven interaction Use Spark to scale processing power and neural networks to scale model complexity

Machine Learning with TensorFlow, Second Edition Mattmann A. Chris 2021-02-02 Updated with new code, new projects, and new chapters, Machine Learning with TensorFlow, Second Edition gives readers a solid foundation in machine-learning concepts and the TensorFlow library. Summary Updated with new code, new projects, and new chapters, Machine Learning with TensorFlow, Second Edition gives readers a solid foundation in machine-learning concepts and the TensorFlow library. Written by NASA JPL Deputy CTO and Principal Data Scientist Chris Mattmann, all examples are accompanied by downloadable Jupyter Notebooks for a hands-on experience coding TensorFlow with Python. New and revised content expands coverage of core machine learning algorithms, and advancements in neural networks such as VGG-Face facial identification classifiers and deep speech classifiers. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the technology Supercharge your data analysis with machine learning! ML algorithms automatically improve as they process data, so results get better over time. You don't have to be a mathematician to use ML: Tools like Google's TensorFlow library help with complex calculations so you can focus on getting the answers you need. About the book Machine Learning with TensorFlow, Second Edition is a fully revised guide to building machine learning models using Python and TensorFlow. You'll apply core ML concepts to real-

world challenges, such as sentiment analysis, text classification, and image recognition. Hands-on examples illustrate neural network techniques for deep speech processing, facial identification, and auto-encoding with CIFAR-10. What's inside Machine Learning with TensorFlow Choosing the best ML approaches Visualizing algorithms with TensorBoard Sharing results with collaborators Running models in Docker About the reader Requires intermediate Python skills and knowledge of general algebraic concepts like vectors and matrices. Examples use the super-stable 1.15.x branch of TensorFlow and TensorFlow 2.x. About the author Chris Mattmann is the Division Manager of the Artificial Intelligence, Analytics, and Innovation Organization at NASA Jet Propulsion Lab. The first edition of this book was written by Nishant Shukla with Kenneth Fricklas. Table of Contents PART 1 - YOUR MACHINE-LEARNING RIG 1 A machine-learning odyssey 2 TensorFlow essentials PART 2 - CORE LEARNING ALGORITHMS 3 Linear regression and beyond 4 Using regression for call-center volume prediction 5 A gentle introduction to classification 6 Sentiment classification: Large movie-review dataset 7 Automatically clustering data 8 Inferring user activity from Android accelerometer data 9 Hidden Markov models 10 Part-of-speech tagging and word-sense disambiguation PART 3 - THE NEURAL NETWORK PARADIGM 11 A peek into autoencoders 12 Applying autoencoders: The CIFAR-10 image dataset 13 Reinforcement learning 14 Convolutional neural networks 15 Building a real-world CNN: VGG-Face ad VGG-Face Lite 16 Recurrent neural networks 17 LSTMs and automatic speech recognition 18 Sequence-to-sequence models for chatbots 19 Utility landscape

Designing Machine Learning Systems with Python David Julian 2016-04-06 Design efficient machine learning systems that give you more accurate results About This Book Gain an understanding of the machine learning design process Optimize machine learning systems for improved accuracy Understand common programming tools and techniques for machine learning Develop techniques and strategies for dealing with large amounts of data from a variety of sources Build models to solve unique tasks Who This Book Is For This book is for data scientists, scientists, or just the curious. To get the most out of this book, you will need to know some linear algebra and some Python, and have a basic knowledge of machine learning concepts. What You Will Learn Gain an understanding of the machine learning design process Optimize the error function of your machine learning system Understand the common programming patterns used in machine learning Discover optimizing techniques that will help you get the

most from your data Find out how to design models uniquely suited to your task In Detail Machine learning is one of the fastest growing trends in modern computing. It has applications in a wide range of fields, including economics, the natural sciences, web development, and business modeling. In order to harness the power of these systems, it is essential that the practitioner develops a solid understanding of the underlying design principles. There are many reasons why machine learning models may not give accurate results. By looking at these systems from a design perspective, we gain a deeper understanding of the underlying algorithms and the optimisational methods that are available. This book will give you a solid foundation in the machine learning design process, and enable you to build customised machine learning models to solve unique problems. You may already know about, or have worked with, some of the off-the-shelf machine learning models for solving common problems such as spam detection or movie classification, but to begin solving more complex problems, it is important to adapt these models to your own specific needs. This book will give you this understanding and more. Style and approach This easy-to-follow, step-by-step guide covers the most important machine learning models and techniques from a design perspective.

Python Data Science Handbook Jake VanderPlas 2016-11-21 For many researchers, Python is a first-class tool mainly because of its libraries for storing, manipulating, and gaining insight from data. Several resources exist for individual pieces of this data science stack, but only with the Python Data Science Handbook do you get them all—IPython, NumPy, Pandas, Matplotlib, Scikit-Learn, and other related tools. Working scientists and data crunchers familiar with reading and writing Python code will find this comprehensive desk reference ideal for tackling day-to-day issues: manipulating, transforming, and cleaning data; visualizing different types of data; and using data to build statistical or machine learning models. Quite simply, this is the must-have reference for scientific computing in Python. With this handbook, you'll learn how to use: IPython and Jupyter: provide computational environments for data scientists using Python NumPy: includes the ndarray for efficient storage and manipulation of dense data arrays in Python Pandas: features the DataFrame for efficient storage and manipulation of labeled/columnar data in Python Matplotlib: includes capabilities for a flexible range of data visualizations in Python Scikit-Learn: for efficient and clean Python implementations of the most important and established machine learning algorithms

Machine Learning with Python for Everyone Mark Fenner 2019-07-30 The Complete Beginner's Guide to Understanding and Building Machine Learning Systems with Python Machine Learning with Python for Everyone will help you master the processes, patterns, and strategies you need to build effective learning systems, even if you're an absolute beginner. If you can write some Python code, this book is for you, no matter how little college-level math you know. Principal instructor Mark E. Fenner relies on plain-English stories, pictures, and Python examples to communicate the ideas of machine learning. Mark begins by discussing machine learning and what it can do; introducing key mathematical and computational topics in an approachable manner; and walking you through the first steps in building, training, and evaluating learning systems. Step by step, you'll fill out the components of a practical learning system, broaden your toolbox, and explore some of the field's most sophisticated and exciting techniques. Whether you're a student, analyst, scientist, or hobbyist, this guide's insights will be applicable to every learning system you ever build or use. Understand machine learning algorithms, models, and core machine learning concepts Classify examples with classifiers, and quantify examples with regressors Realistically assess performance of machine learning systems Use feature engineering to smooth rough data into useful forms Chain multiple components into one system and tune its performance Apply machine learning techniques to images and text Connect the core concepts to neural networks and graphical models Leverage the Python scikit-learn library and other powerful tools Register your book for convenient access to downloads, updates, and/or corrections as they become available. See inside book for details.

Machine learning avec Python ANNULE Andreas C.MUELLER 2018-10-04 Entrez de plain-pied dans le monde fascinant la data science Vous aussi participez à la révolution qui ramène l'intelligence artificielle au coeur de notre société, grace aux data scientists. La data science consiste à traduire des problèmes de toute autre nature, en problèmes de modélisation quantitative, résolus par des algorithmes de traitement. Ce livre se présente comme une référence pour tous les développeurs, statisticiens ou chefs de projets ayant à résoudre des problèmes liés à la data science. Au programme : Pourquoi utiliser le machine learning Les différentes versions de Python L'apprentissage non supervisé et le préprocessing Représenter les données Processus de validation Algorithmes, chaînes et pipeline Travailler avec des données de type texte Du prototype à la production

Machine Learning Virginie Mathivet 2021-10-13

Interpretable Machine Learning with Python Serg Masís 2021-03-26 Understand the key aspects and challenges of machine learning interpretability, learn how to overcome them with interpretation methods, and leverage them to build fairer, safer, and more reliable models Key FeaturesLearn how to extract easy-to-understand insights from any machine learning modelBecome well-versed with interpretability techniques to build fairer, safer, and more reliable modelsMitigate risks in AI systems before they have broader implications by learning how to debug black-box modelsBook Description Do you want to understand your models and mitigate risks associated with poor predictions using machine learning (ML) interpretation? Interpretable Machine Learning with Python can help you work effectively with ML models. The first section of the book is a beginner's guide to interpretability, covering its relevance in business and exploring its key aspects and challenges. You'll focus on how white-box models work, compare them to black-box and glass-box models, and examine their trade-off. The second section will get you up to speed with a vast array of interpretation methods, also known as Explainable AI (XAI) methods, and how to apply them to different use cases, be it for classification or regression, for tabular, time-series, image or text. In addition to the step-by-step code, the book also helps the reader to interpret model outcomes using examples. In the third section, you'll get hands-on with tuning models and training data for interpretability by reducing complexity, mitigating bias, placing guardrails, and enhancing reliability. The methods you'll explore here range from state-of-the-art feature selection and dataset debiasing methods to monotonic constraints and adversarial retraining. By the end of this book, you'll be able to understand ML models better and enhance them through interpretability tuning. What you will learnRecognize the importance of interpretability in businessStudy models that are intrinsically interpretable such as linear models, decision trees, and Naïve BayesBecome well-versed in interpreting models with model-agnostic methodsVisualize how an image classifier works and what it learnsUnderstand how to mitigate the influence of bias in datasetsDiscover how to make models more reliable with adversarial robustnessUse monotonic constraints to make fairer and safer modelsWho this book is for This book is for data scientists, machine learning developers, and data stewards who have an increasingly critical responsibility to explain how the AI systems they develop work, their impact on decision making, and how they identify and manage bias. Working knowledge of machine learning and the Python programming language is

expected.

Hands-On Unsupervised Learning with Python Giuseppe Bonaccorso 2019-02-28 Discover the skill-sets required to implement various approaches to Machine Learning with Python Key FeaturesExplore unsupervised learning with clustering, autoencoders, restricted Boltzmann machines, and moreBuild your own neural network models using modern Python librariesPractical examples show you how to implement different machine learning and deep learning techniquesBook Description Unsupervised learning is about making use of raw, untagged data and applying learning algorithms to it to help a machine predict its outcome. With this book, you will explore the concept of unsupervised learning to cluster large sets of data and analyze them repeatedly until the desired outcome is found using Python. This book starts with the key differences between supervised, unsupervised, and semi-supervised learning. You will be introduced to the best-used libraries and frameworks from the Python ecosystem and address unsupervised learning in both the machine learning and deep learning domains. You will explore various algorithms, techniques that are used to implement unsupervised learning in real-world use cases. You will learn a variety of unsupervised learning approaches, including randomized optimization, clustering, feature selection and transformation, and information theory. You will get hands-on experience with how neural networks can be employed in unsupervised scenarios. You will also explore the steps involved in building and training a GAN in order to process images. By the end of this book, you will have learned the art of unsupervised learning for different real-world challenges. What you will learnUse cluster algorithms to identify and optimize natural groups of dataExplore advanced non-linear and hierarchical clustering in actionSoft label assignments for fuzzy c-means and Gaussian mixture modelsDetect anomalies through density estimationPerform principal component analysis using neural network modelsCreate unsupervised models using GANsWho this book is for This book is intended for statisticians, data scientists, machine learning developers, and deep learning practitioners who want to build smart applications by implementing key building block unsupervised learning, and master all the new techniques and algorithms offered in machine learning and deep learning using real-world examples. Some prior knowledge of machine learning concepts and statistics is desirable.

Python Machine Learning Sebastian Raschka 2019-12-09 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, 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.

Deep Learning Ian Goodfellow 2016-11-10 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 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.

Deep Learning avec TensorFlow Aurélien Géron 2017-11-22 Cet ouvrage, conçu pour tous ceux qui souhaitent s'initier au Deep Learning (apprentissage profond) est la traduction de la deuxième partie du best-seller américain Hands-On Machine Learning with Scikit-Learn & TensorFloW. Le Deep Learning est récent et il évolue vite. Ce livre en présente les principales techniques : les réseaux de neurones profonds, capables de modéliser toutes sortes de données, les réseaux de convolution, capables de classifier des images, les segmenter et découvrir les objets ou personnes qui s'y trouvent, les réseaux récurrents, capables de gérer des séquences telles que des phrases, des séries temporelles, ou encore des vidéos, les Autoencoders qui peuvent découvrir toutes sortes de structures dans des données, de façon non supervisée, et enfin le Reinforcement Learning (apprentissage par renforcement) qui permet de

découvrir automatiquement les meilleures actions pour effectuer une tâche (par exemple un robot qui apprend à marcher). Ce livre présente TensorFlow, le framework de Deep Learning créé par Google. Il est accompagné de Jupyter notebooks (disponibles sur github) qui contiennent tous les exemples de code du livre, afin que le lecteur puisse facilement tester et faire tourner les programmes. Il complète un premier livre intitulé Machine Learning avec Scikit-Learn.

Hands-On Machine Learning with scikit-learn and Scientific Python Toolkits Tarek Amr 2020-07-24 Integrate scikit-learn with various tools such as NumPy, pandas, imbalanced-learn, and scikit-surprise and use it to solve real-world machine learning problems Key Features Delve into machine learning with this comprehensive guide to scikit-learn and scientific Python Master the art of data-driven problem-solving with hands-on examples Foster your theoretical and practical knowledge of supervised and unsupervised machine learning algorithms Book Description Machine learning is applied everywhere, from business to research and academia, while scikit-learn is a versatile library that is popular among machine learning practitioners. This book serves as a practical guide for anyone looking to provide hands-on machine learning solutions with scikit-learn and Python toolkits. The book begins with an explanation of machine learning concepts and fundamentals, and strikes a balance between theoretical concepts and their applications. Each chapter covers a different set of algorithms, and shows you how to use them to solve real-life problems. You'll also learn about various key supervised and unsupervised machine learning algorithms using practical examples. Whether it is an instance-based learning algorithm, Bayesian estimation, a deep neural network, a tree-based ensemble, or a recommendation system, you'll gain a thorough understanding of its theory and learn when to apply it. As you advance, you'll learn how to deal with unlabeled data and when to use different clustering and anomaly detection algorithms. By the end of this machine learning book, you'll have learned how to take a data-driven approach to provide end-to-end machine learning solutions. You'll also have discovered how to formulate the problem at hand, prepare required data, and evaluate and deploy models in production. What you will learn Understand when to use supervised, unsupervised, or reinforcement learning algorithms Find out how to collect and prepare your data for machine learning tasks Tackle imbalanced data and optimize your algorithm for a bias or variance tradeoff Apply supervised and unsupervised algorithms to overcome various machine learning challenges Employ best practices for tuning your algorithm's hyper parameters Discover how to use neural networks

for classification and regression Build, evaluate, and deploy your machine learning solutions to production Who this book is for This book is for data scientists, machine learning practitioners, and anyone who wants to learn how machine learning algorithms work and to build different machine learning models using the Python ecosystem. The book will help you take your knowledge of machine learning to the next level by grasping its ins and outs and tailoring it to your needs. Working knowledge of Python and a basic understanding of underlying mathematical and statistical concepts is required.

Deep Learning with Applications Using Python Navin Kumar Manaswi 2018-04-04 Explore deep learning applications, such as computer vision, speech recognition, and chatbots, using frameworks such as TensorFlow and Keras. This book helps you to ramp up your practical know-how in a short period of time and focuses you on the domain, models, and algorithms required for deep learning applications. Deep Learning with Applications Using Python covers topics such as chatbots, natural language processing, and face and object recognition. The goal is to equip you with the concepts, techniques, and algorithm implementations needed to create programs capable of performing deep learning. This book covers convolutional neural networks, recurrent neural networks, and multilayer perceptrons. It also discusses popular APIs such as IBM Watson, Microsoft Azure, and scikit-learn. What You Will Learn Work with various deep learning frameworks such as TensorFlow, Keras, and scikit-learn. Use face recognition and face detection capabilities Create speech-to-text and text-to-speech functionality Engage with chatbots using deep learning Who This Book Is For Data scientists and developers who want to adapt and build deep learning applications.

Machine Learning with R Abhijit Ghatak 2017-11-23 This book helps readers understand the mathematics of machine learning, and apply them in different situations. It is divided into two basic parts, the first of which introduces readers to the theory of linear algebra, probability, and data distributions and it's applications to machine learning. It also includes a detailed introduction to the concepts and constraints of machine learning and what is involved in designing a learning algorithm. This part helps readers understand the mathematical and statistical aspects of machine learning. In turn, the second part discusses the algorithms used in supervised and unsupervised learning. It works out each learning algorithm mathematically and encodes it in R to produce customized learning applications. In the process,

it touches upon the specifics of each algorithm and the science behind its formulation. The book includes a wealth of worked-out examples along with R codes. It explains the code for each algorithm, and readers can modify the code to suit their own needs. The book will be of interest to all researchers who intend to use R for machine learning, and those who are interested in the practical aspects of implementing learning algorithms for data analysis. Further, it will be particularly useful and informative for anyone who has struggled to relate the concepts of mathematics and statistics to machine learning.

Machine Learning with Python Cookbook Chris Albon 2018-03-09 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

Le Machine Learning avec Python Madjid Khichane 2021

Python Deep Learning Projects Matthew Lamons 2018-10-31 Insightful projects to master deep learning and neural network architectures using Python and Keras Key FeaturesExplore deep learning across computer vision, natural language processing (NLP), and image processingDiscover best practices for the training of deep neural networks and their deploymentAccess popular deep learning models as well as widely used neural network architecturesBook Description Deep learning has been gradually revolutionizing every field of artificial intelligence, making application development easier. Python Deep

Learning Projects imparts all the knowledge needed to implement complex deep learning projects in the field of computational linguistics and computer vision. Each of these projects is unique, helping you progressively master the subject. You'll learn how to implement a text classifier system using a recurrent neural network (RNN) model and optimize it to understand the shortcomings you might experience while implementing a simple deep learning system. Similarly, you'll discover how to develop various projects, including word vector representation, open domain question answering, and building chatbots using seq-to-seq models and language modeling. In addition to this, you'll cover advanced concepts, such as regularization, gradient clipping, gradient normalization, and bidirectional RNNs, through a series of engaging projects. By the end of this book, you will have gained knowledge to develop your own deep learning systems in a straightforward way and in an efficient way What you will learnSet up a deep learning development environment on Amazon Web Services (AWS)Apply GPU-powered instances as well as the deep learning AMIImplement seq-to-seq networks for modeling natural language processing (NLP)Develop an end-to-end speech recognition systemBuild a system for pixel-wise semantic labeling of an imageCreate a system that generates images and their regionsWho this book is for Python Deep Learning Projects is for you if you want to get insights into deep learning, data science, and artificial intelligence. This book is also for those who want to break into deep learning and develop their own AI projects. It is assumed that you have sound knowledge of Python programming

Python pour le data scientist Emmanuel Jakobowicz 2021-03-03