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Autore	Idris Ivan
Titolo	Learning NumPy Array : supercharge your scientific Python computations by understanding how to use the NumPy library effectively // Ivan Idris ; Duraïd Fatouhi, cover image
Pubbl/distr/stampa	Birmingham, England : , : Packt Publishing, , 2014 ©2014
ISBN	1-78398-391-4
Edizione	[1st edition]
Descrizione fisica	1 online resource (164 p.)
Collana	Community experience distilled
Disciplina	005.133
Soggetti	Python (Computer program language) Numerical analysis - Data processing
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Includes index.
Nota di contenuto	Cover; Copyright; Credits; About the Author; About the Reviewers; www.PacktPub.com; Table of Contents; Preface; Chapter 1: Getting Started with NumPy; Python; Installing NumPy, Matplotlib, SciPy, and IPython on Windows; Installing NumPy, Matplotlib, SciPy, and IPython on Linux; Installing NumPy, Matplotlib, and SciPy on Mac OS X; Building from source; NumPy arrays; Adding arrays; Online resources and help; Summary; Chapter 2: NumPy Basics; The NumPy array object; The advantages of using NumPy arrays; Creating a multidimensional array; Selecting array elements; NumPy numerical types Data type objectsCharacter codes; dtype constructors; dtype attributes; Creating a record data type; One-dimensional slicing and indexing; Manipulating array shapes; Stacking arrays; Splitting arrays; Array attributes; Converting arrays; Creating views and copies; Fancy indexing; Indexing with a list of locations; Indexing arrays with Booleans; Stride tricks for Sudoku; Broadcasting arrays; Summary; Chapter 3: Basic Data Analysis with NumPy; Introducing the dataset; Determining the daily temperature range; Looking for evidence of global warming; Comparing solar radiation versus temperature Analyzing wind directionAnalyzing wind speed; Analyzing precipitation and sunshine duration; Analyzing monthly precipitation in De Bilt; Analyzing atmospheric pressure in De Bilt; Analyzing atmospheric

humidity in De Bilt; Summary; Chapter 4: Simple Predictive Analytics with NumPy; Examining autocorrelation of average temperature with pandas; Describing data with pandas DataFrames; Correlating weather and stocks with pandas; Predicting temperature; Autoregressive model with lag 1; Autoregressive model with lag 2; Analysing intra-year daily average temperatures
Introducing the day-of-the-year temperature modelModeling temperature with the SciPy leastsq function; Day-of-year temperature take two; Moving-average temperature model with lag 1; The Autoregressive Moving Average temperature model; The time-dependent temperature mean adjusted autoregressive model; Outliers analysis of average De Bilt temperature; Using more robust statistics; Summary; Chapter 5: Signal Processing Techniques; Introducing the Sunspot data; Sifting continued; Moving averages; Smoothing functions; Forecasting with an ARMA model; Filtering a signal; Designing the filter Demonstrating cointegrationSummary; Chapter 6: Profiling, Debugging, and Testing; Assert functions; The assert_almost_equal function; Approximately equal arrays; The assert_array_almost_equal function; Profiling a program with IPython; Debugging with IPython; Performing Unit tests; Nose tests decorators; Summary; Chapter 7: The Scientific Python Ecosystem; Numerical integration; Interpolation; Using Cython with NumPy; Clustering stocks with scikit-learn; Detecting corners; Comparing NumPy to Blaze; Summary; Index

Sommario/riassunto

A step-by-step guide, packed with examples of practical numerical analysis that will give you a comprehensive, but concise overview of NumPy. This book is for programmers, scientists, or engineers, who have basic Python knowledge and would like to be able to do numerical computations with Python.
