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IT Academy

Módulo 2
Clase 2-1

Librería Numpy

Objetivos

- Aprender sobre librerías en Python para la ciencia de datos.

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Librerías para la ciencia de datos

Una librería o biblioteca es un conjunto de funciones implementadas por otro programador que nos facilitan realizar tareas, principalmente porque no debemos volver a programar este código. En esta clase será vital el uso de librerías para poder analizar archivos con información. Algunas librerías utilizadas en el análisis y ciencia de datos:

- Numpy
- Pandas
- Matplotlib
- Seaborn
- Scikit-learn
- Scipy
- Statsmodels

https://blogvisionarios.com/e-learning/articulos-ia/10-librerias-python-para-data-science-y-machine-learning/

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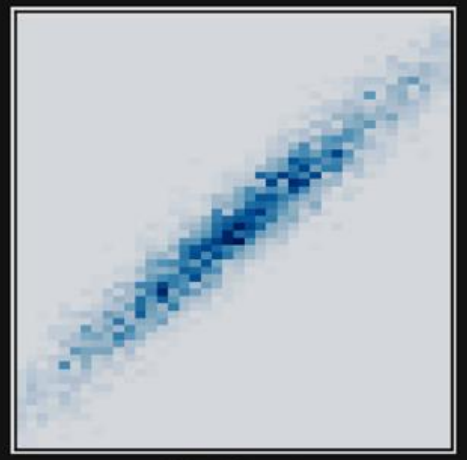
matplotlib

Plot types Examples Tutorials Reference User guide Develop Release notes



hist2d(x, y)

Matplotlib: Visualization with Python

Matplotlib is a comprehensive library for creating static, animated, and interactive visualizations in Python.
Matplotlib makes easy things easy and hard things possible.

- Create publication quality plots.
- Make interactive figures that can zoom, pan, update.
- Customize visual style and layout.
- Export to many file formats.
- Embed in JupyterLab and Graphical User Interfaces.
- Use a rich array of third-party packages built on Matplotlib.

Try Matplotlib (on Binder) →

Getting Started

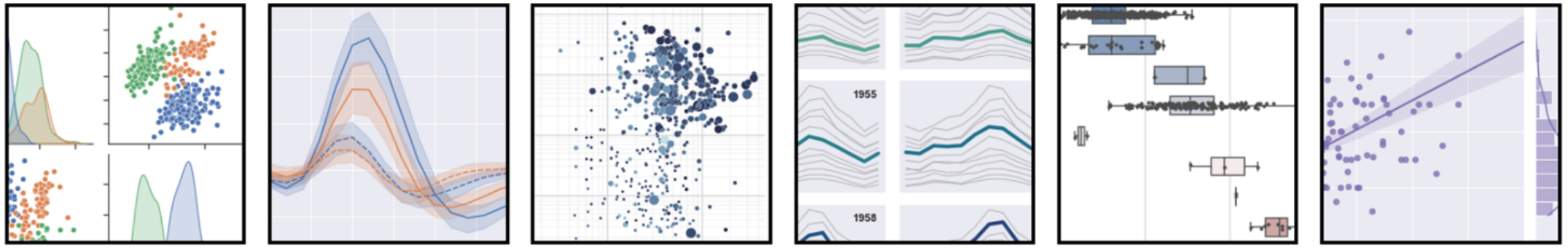
Examples

Reference

Cheat Sheets

Documentation

seaborn: statistical data visualization



Seaborn is a Python data visualization library based on matplotlib. It provides a high-level interface for drawing attractive and informative statistical graphics.

For a brief introduction to the ideas behind the library, you can read the introductory notes or the paper. Visit the installation page to see how you can download the package and get started with it. You can browse the example gallery to see some of the things that you can do with seaborn, and then check out the tutorials or API reference to find out how.

To see the code or report a bug, please visit the GitHub repository. General support questions are most at home on stackoverflow, which has a dedicated channel for seaborn.

Contents

Features

- New Objects: API | Tutorial
- Relational plots: API | Tutorial
- Distribution plots: API | Tutorial
- Categorical plots: API | Tutorial
- Regression plots: API | Tutorial
- Multi-plot grids: API | Tutorial
- Figure theming: API | Tutorial
- Color palettes: API | Tutorial

pandas

About us | Getting started | Documentation | Community | Contribute

pandas

pandas is a fast, powerful, flexible and easy to use open source data analysis and manipulation tool, built on top of the Python programming language.

Install pandas now!

Getting started

- Install pandas
- Getting started

Documentation

- User guide
- API reference
- Contributing to pandas
- Release notes

Community

- About pandas
- Ask a question
- Ecosystem

With the support of:

NUMFOCUS OPEN CODE = BETTER SCIENCE

TWO SIGMA

VOLTRON DATA

d-fine

Quansight Labs

NVIDIA

Latest version: 1.5.3

- What's new in 1.5.3
- Release date: Jan 19, 2023
- Documentation (web)
- Download source code

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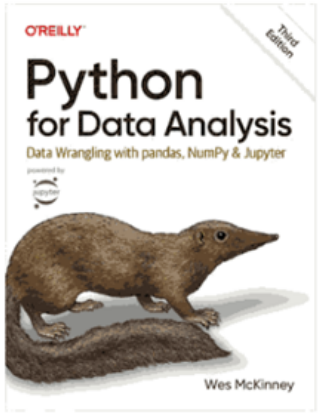


Previous versions

- 1.5.2 (Nov 22, 2022)

scikit-learn

Machine Learning in Python

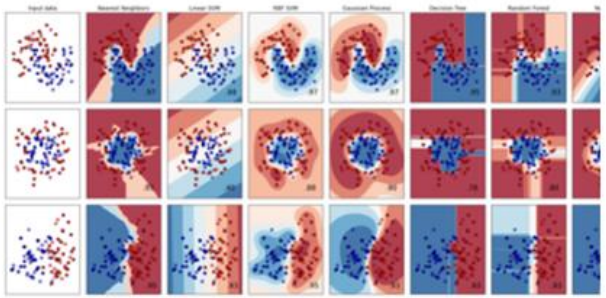
Getting Started | Release Highlights for 1.2 | GitHub

- Simple and efficient tools for predictive data analysis
- Accessible to everybody, and reusable in various contexts
- Built on NumPy, SciPy, and matplotlib
- Open source, commercially usable - BSD license

Classification

Identifying which category an object belongs to.

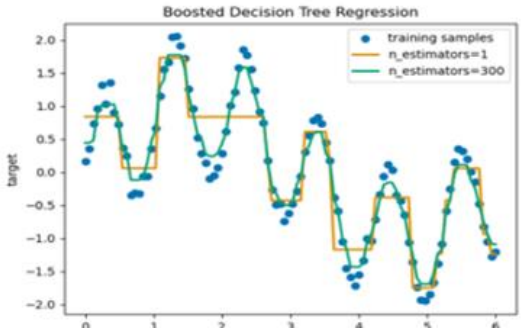
Applications: Spam detection, image recognition.
Algorithms: SVM, nearest neighbors, random forest, and more...



Regression

Predicting a continuous-valued attribute associated with an object.

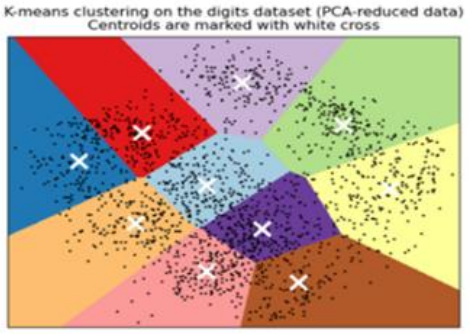
Applications: Drug response, Stock prices.
Algorithms: SVR, nearest neighbors, random forest, and more...



Clustering

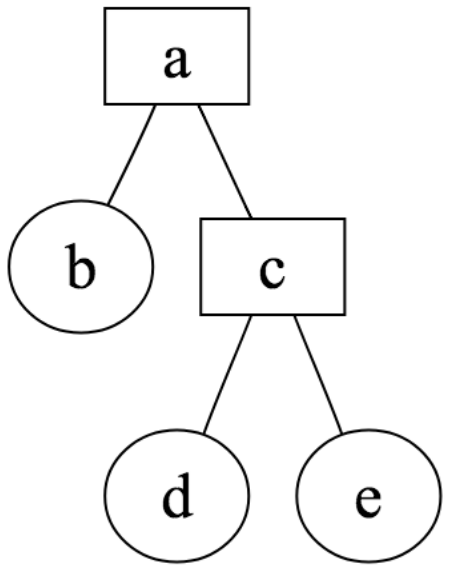
Automatic grouping of similar objects into sets.

Applications: Customer segmentation, Grouping experiment outcomes
Algorithms: k-Means, spectral clustering, mean-shift, and more...



Paquetes en Python

```
a/
    __init__.py
    b.py
    c/
        __init__.py
        d.py
        e.py
```




```
math.cos(0)
1.0
```

- **Módulos**: Para facilitar la gestión de programas grandes, el software se divide en trozos más pequeños. Contiene funciones.
- **Subpaquetes**: Contiene módulos agrupados por tipo.
- **Paquetes/Librerías**: Contiene cientos de módulos organizados en jerarquías.

Librerías de Python

Sintaxis:

- **import** nombre_librería **as** abreviación estándar
- **from** nombre_librería.sublibrería **import** sublibrería
- **From** nombre_librería.sublibrería.módulo **import** módulo **as** abreviación estándar

```
from numpy.linalg import linalg
```

or

```
from numpy.linalg import linalg as lin
```

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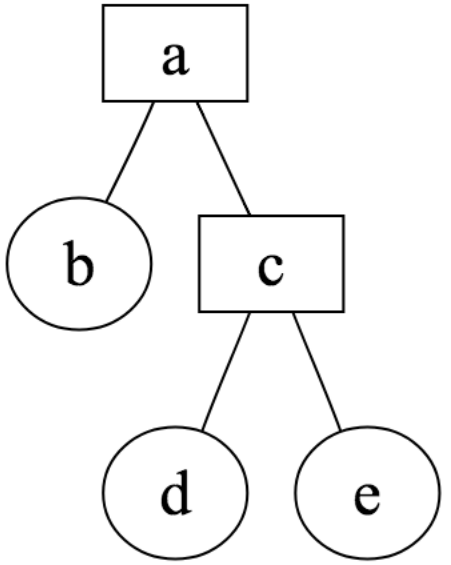
Librerías de Python

from nombre_librería.sublibrería.módulo **import** función

```
from numpy.linalg.linalg import det
```

Jerarquía:

```
numpy     package
  .
linalg    subpackage
  .
linalg    module
  .
 det      function
```



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Dudas y consultas