



BABD

Masters in Business Analytics and Big Data

Python Basics

ML Python Labs

- 02.15 Setup & Introduction to Python Basics
- 02.16 Python and Data Science Libraries
- 02.21,22 Exploratory Data Analysis
- 02.23 Classification
- 03.01,02 Classification
- 03.14,15 Regression
- 03.16,17 Text
- 03.21,22 Text

Material: <https://github.com/mauriciosotogomez/BABD2022> [▶ Link](#)

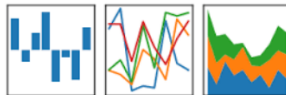
Setup: What we need

- ▶ Python ≥ 3.6
- ▶ Sklearn
- ▶ Jupyter Notebook
- ▶ Numpy
- ▶ Pandas
- ▶ Matplotlib
- ▶ Seaborn



pandas

$$y_{it} = \beta' x_{it} + \mu_i + \epsilon_{it}$$



matplotlib



<https://pollev.com/mauriciosoto>

Data Science & Machine Learning libraries



A library providing support for large, multi-dimensional arrays and matrices, along with a large collection of high-level mathematical functions to operate on these arrays.

pandas

$$y_{it} = \beta' x_{it} + \mu_i + \epsilon_{it}$$



A library for data manipulation and analysis. In particular, it offers data structures and operations for manipulating numerical tables and time series.



A library featuring various classification, regression and clustering algorithms including support vector machines, random forests, k-means..., and is designed to interoperate with the Python numerical and scientific libraries e.g. NumPy.

Exercise 1. Functions

Create a function that given two integers m, n computes the greatest common divisor between m and n .

Exercise 2. Numpy

1. Create a random array of length 100.
2. Sort your array.
3. Compute the mean, median and sample variance.

Exercise 2. Numpy

1. Create a random array of length 100.
Hint: `np.random.rand()`
2. Sort your array.
3. Compute the mean, median and sample variance.

Exercise 3. Pandas

1. Import the dataset *iris* as a DataFrame
2. Add the columns names (sepal length, sepal width, petal length, petal width).
3. Create a new column that contains the ratio between the sepal and petal length.
4. Add a new column named `target` with value 1 if the type is *setosa* and 0 otherwise.

Exercise 4.

1. Find a database of your particular interest.
2. Formulate a research question (statistic, prediction, classification, etc)