POLITECNICO DI MILANO





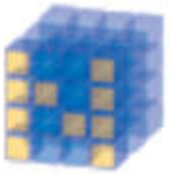
Scientific Computing with Python

Energy and Environmental Technologies for Building Systems

Piacenza Campus, 1st Semester 2016/2017

B. Najafi

Principal Python Scientific Modules



NumPy

Base N-dimensional array package

SciPy library

Fundamental library for scientific computing

Matplotlib

Comprehensive 2D Plotting

IP[y]: IPython

IPython

Enhanced Interactive Console

Sympy

Symbolic mathematics

pandas

Data structures analysis

One Dimensional Data

NumPy	PANDAS
Called Arrays	Called Series
Simpler	More complex with More features
	Built on NumPy Arrays !

Numpy Arrays Vs. Lists

A1 = arrays([‘John’,’Carlo’,’Fabio’])

Similarities	Differences
Access Element By positions A1[0] = ‘John’	All of the elements shoudl have the same type!
Access a Range of Elements A1[0:2] = ‘John’,’Carlo’	Usefull functions:Mean(),std() They are faster!
Loop access: For name in A1:	Can have a higher dimension

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