Machine Learning Applications

TECHNISCHE UNIVERSITÄT DARMSTADT

Winter semester 2019/2020

Tutorial

Introduction to Python and ML programming

Programming Languages for Data Science and ML

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Python	- De Facto programming language for Data Science and ML.
R	- Specialized on Statistics and Data Science has ML support.
C++	- Support for very fast ML algorithms. code on CPU and GPU. Mostly for Robotics & CV.
MATLAB	- Very good for math. Has GPU and deep learning-support (if you €).
Julia	- New programming language. Idea: Easy as python, fast as C++.

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What is Python?

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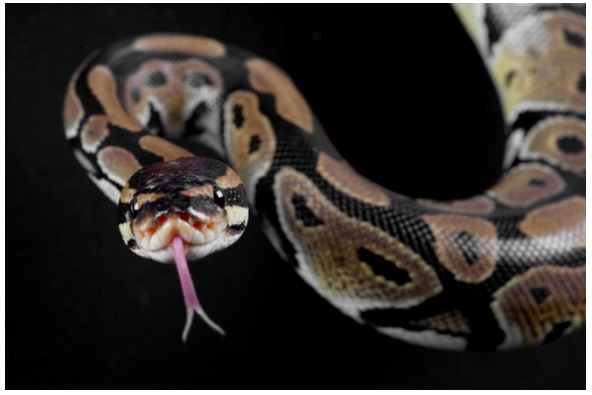
- General purpose programming language
- Open source
- Interpreter based
- Procedural, Functional and Object Oriented
- Can interface with C++ and GPU (important for ML)
- Offers interactive environment
- Easy to learn



picture: Getty Images

https://www.intro.de/kultur/die-besten-momente-von-monty-python

Anaconda

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- Conda is a package and environment management system
  - Separates different python version
  - Helps to find and manage Python packages (our main use case)

- Get Conda with the Anaconda distribution
  - Cross-platform (Windows, Max OS, Linux)
  - Very popular for data science
  - Comes preloaded with software: https://www.anaconda.com/distribution/

Python Packages

ANACONDA.

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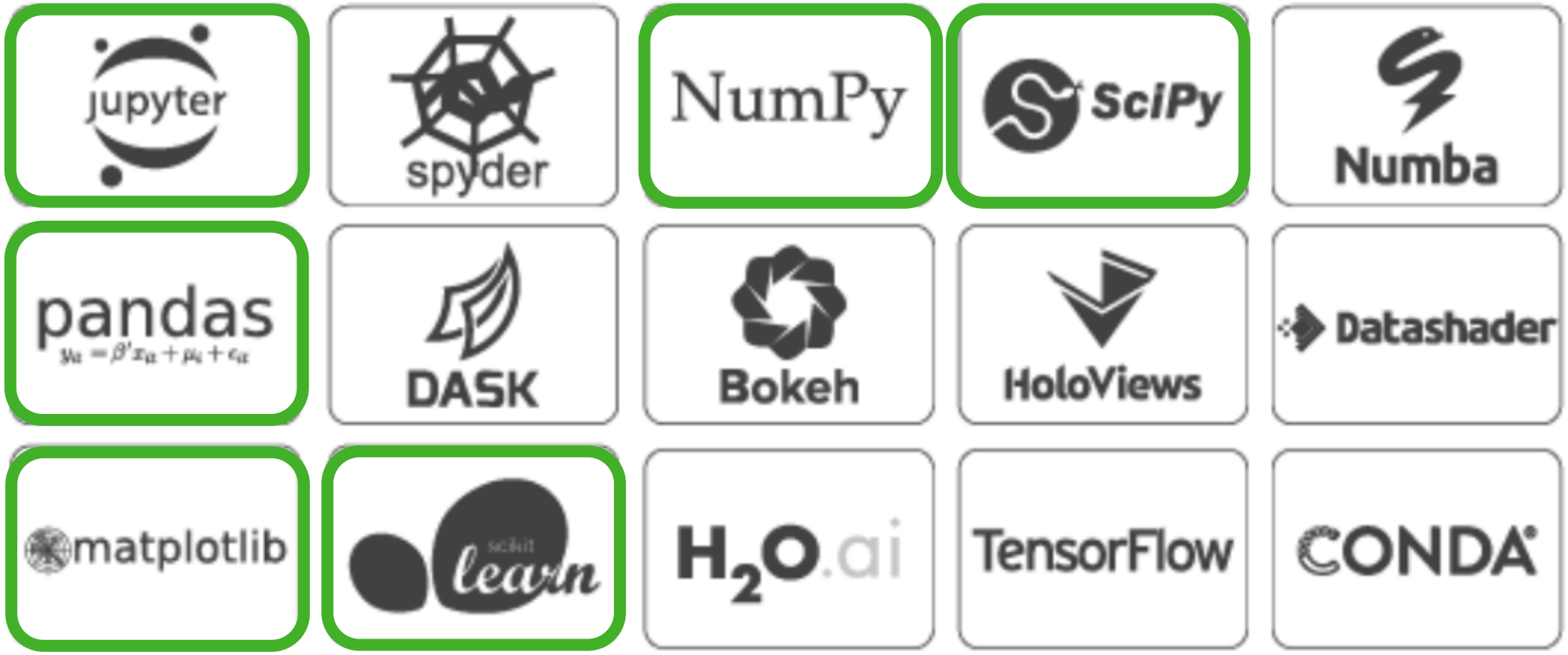

https://www.anaconda.com/distribution/

Python IDEs

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IDE	Pro	Contra
IDLE	+ Comes preinstalled with Python + Very easy to navigate	- Very minimalistic
Spyder	+ Comes preinstalled with Anaconda + Easy to learn	- Not many features, might seem „old-school“
Jupyter Notebooks	+ Comes preinstalled with Anaconda + Completely interactive (great for sharing code)	- Not a real DIE → missing lots of features
PyCharm	+ Professional IDE + Very modern, has all features + Free for students	- Might be overwhelming - Limited to community version after university (no data science features)

- Many more available
- See what works best for you
- We might be able to help you with IDE related problems, but can not guarantee it

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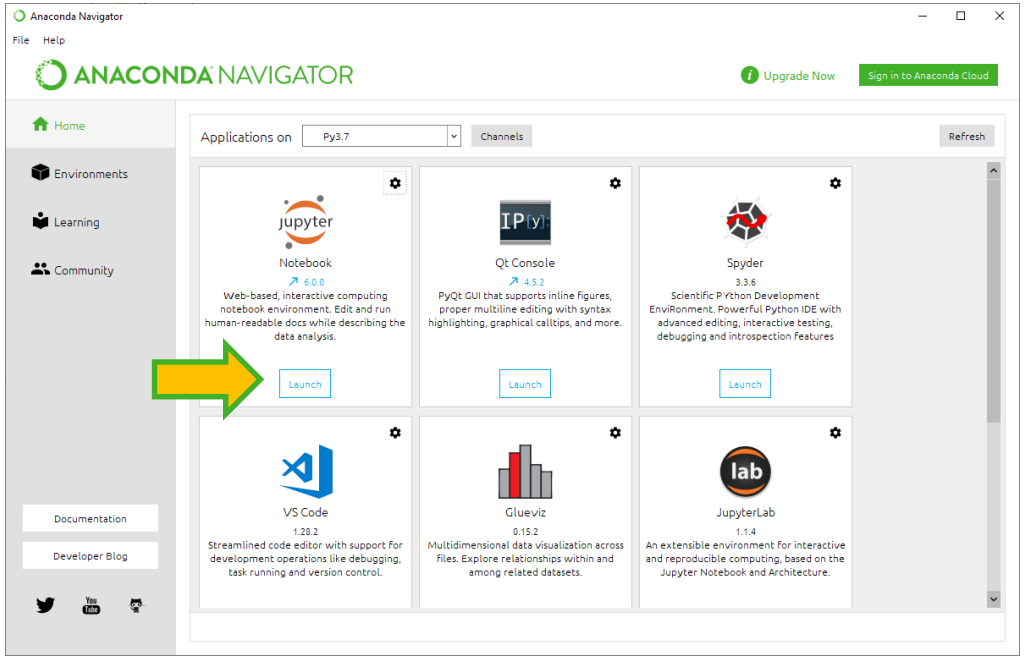
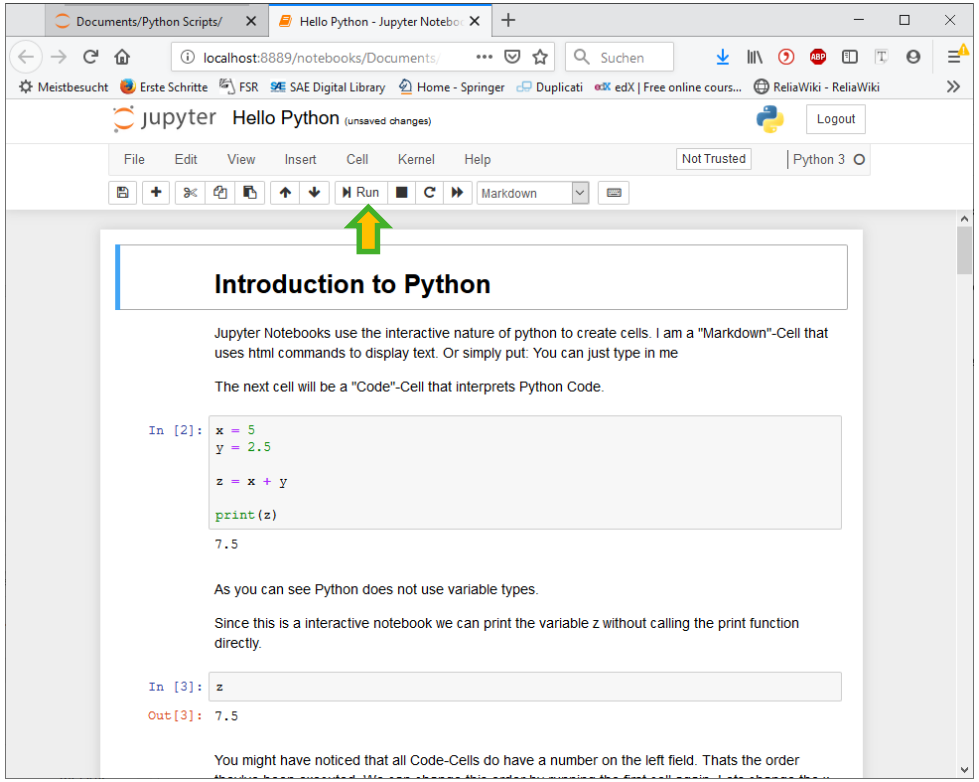
Getting started

- Open Jupiter Notebook and navigate to .ipynb-File (e.g. “Hello Python.ipynb”)
- Press “run” to execute sample code






THANK U