Lectures of the IMPRS on Gravitational-Wave Astronomy in Potsdam

Making sense of data: introduction to statistics for gravitational-wave astronomy (2023)

Installing a working environment (Jupyter Lab) for Python

1) Install the Anaconda Packet Manager on your laptop
(https://www.anaconda.com/distribution/) Please keep in mind that the Conda-Setup has to fit your operating system (LIN/WIN/MAC - 32bit/64bit). Fill all checkboxes for optional install items.

2) The command **conda - -help** should be available in a Terminal/CMD/BASH after the setup. Create a **Virtual Environment** within conda which will be your working environment. The commands are as follows

- To create an environment for only the statistics part of the course use:
  conda create -c conda-forge -n senseofdata2023-stats "numpy<=1.23.5" "pymc>=5" jupyterlab seaborn statsmodels

- To create an environment for only the machine leaning part of the course use:
  conda create -c conda-forge -n senseofdata2023-ml seaborn jupyterlab corner pytorch lalsimulation pycbc

- To create a environment for both parts of the course use:
  conda create -c conda-forge -n senseofdata2023 "numpy<=1.23.5" "pymc>=5" jupyterlab seaborn statsmodels corner pytorch lalsimulation pycbc

Note that you can also add new packages to an existing environment, for example
conda install -c conda-forge -n senseofdata2023 pytorch lalsimulation pycbc corner

3) Now activate your working environment with the command: **conda activate senseofdata2023** when active, the beginning of the line will change e.g. **(senseofdata2023) Laptop-xyz:....$** where **(senseofdata2023)** is the name of the working environment.

4) In the virtual environment we can now use PIP (the package installer for Python) to install more software, command: **pip install - -upgrade pip**. The above command will install all of the packages needed for the practicals for this course, so you shouldn't need tod install extra packages.

5) Test your setup after the installation: start a jupyter lab instance (type: **jupyter lab** in the terminal) and open a new Python3 notebook. Go to the first cell and type **import numpy as np** confirm by pressing the **SHIFT+RETURN** Keys

Make sure that these imports work without errors.

6) To end the working environment: **Save** and close the Browser-Tab of JupyterLab,
in the CMD/Terminal/BASH press the **CTRL+c** Keys and confirm with **Y**.
Than deactivate the virtual environment by: **source deactivate** or **conda deactivate**.
To start working again go back to step 3) (activating your working environment)