Introduction to NumPy and SciPy

Wim R.M. Cardoen, PhD
University of Utah
Center for High Performance Computing
155 S. 1452 E., Rm 420
Salt Lake City
UT, 84112
USA
wim.cardoen@utah.edu

Aug 22, 2024

Introduction

In this document we describe the installation of the tutorial/lecture notes and/or verification of the required software.

I   Installation of the tutorial

The tutorial/lecture notes can be retrieved as follows:

- either by using Git[1]:
  git clone https://github.com/chpc-uofu/intro-numpy.git

- or by downloading the following zip file:
  https://github.com/chpc-uofu/intro-numpy/archive/refs/heads/main.zip

In the former case the local directory intro-numpy will be created.

In what follows we assume that the newly created directory bears the name intro-numpy.

---

[1]In this case we presume that the Git software is installed on your machine. The Git software can be freely obtained from the following site: https://git-scm.com/

II Required software

- Python >= 3.12
  We will be using Python >= 3.12 during the lectures. We also require the following Python packages to be installed:

    - ⋆ numpy >= 2.0.0
    - ⋆ scipy >= 1.14.0
    - ⋆ matplotlib >= 3.9.0
    - ⋆ jupyterlab >= 4.2.0

- Jupyter
  The lectures will be presented using Jupyter notebooks.

In the tutorial materials there is a script `check_env.py` (see Section III) that can be used to check your installation.

III Check your Python installation

The packages that are required for this tutorial are quite recent. Therefore, it is quite likely that you need to update your Python installation.

After installing the tutorial, you can immediately check whether the required packages are present on your system.

```
$ cd intro-numpy[2]
$ python3 check_env.py[3]


sleipnir@x1:~/intro-numpy$ python3 check_env.py


  Checking installation ...

    Python 3.12.4 found
        --prefix=/home/sleipnir/mymini3


            numpy  inst.:    2.1.0  >= req.:    2.0.0 -> OK
```

---

[2]The lines starting with a $ sign are commands to be executed in a Shell.

[3]The output generated by this command will be dependent on the installed version of Python and the required packages.

```
        scipy  inst.:    1.14.1  >= req.:    1.14.0 -> OK
   matplotlib  inst.:     3.9.2  >= req.:     3.9.0 -> OK
   jupyterlab  inst.:     4.2.4  >= req.:     4.2.0 -> OK

 All required packages are installed
 Congratulations!

End checking installation
```

If some of the above packages are missing you can proceed with the installation step (section IV). Otherwise you are completely ready for the tutorial.

IV   Installation of the required software

If you don't have Python3 installed or you have an incomplete installation (see section III), installing the Anaconda distribution is the easiest option.

The Anaconda distribution is available for the Mac, Windows & Linux OSs. It also contains all the aforementioned requirements/packages.

Return to section III to verify that your installation is properly working.