



Image data science with Python and Napari @EPFL

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Speakers: Till Korten, Robert Haase Support by: Edward Andò, Mallory Wittwer, Florian Aymanns

Course schedule

	Monday	Tuesday	Wednesday	Thursday	Friday
Morning	<ul style="list-style-type: none">• Introduction to Bio-image analysis• Python basics• Image data	<ul style="list-style-type: none">• Introduction to Napari• Image Filtering	<ul style="list-style-type: none">• Machine learning• Deep learning	<ul style="list-style-type: none">• Working with tabular data• Plotting	<ul style="list-style-type: none">• Writing good code• Licensing
Afternoon	<ul style="list-style-type: none">• For-loops• Conditions• Functions	<ul style="list-style-type: none">• Image segmentation• Feature extraction	Project work in groups		Group presentations

- 9:30 Recap discussion
- 10:00 Lecture
- 10:30 Joint exercise

Short break

- 11:00 Lecture
- 12:00 Lunch + homework

Flexible time/place

Monday/Tuesday only

- 14:00 Recap discussion
- 14:30 Lecture

- 15:30 Homework

Flexible time/place

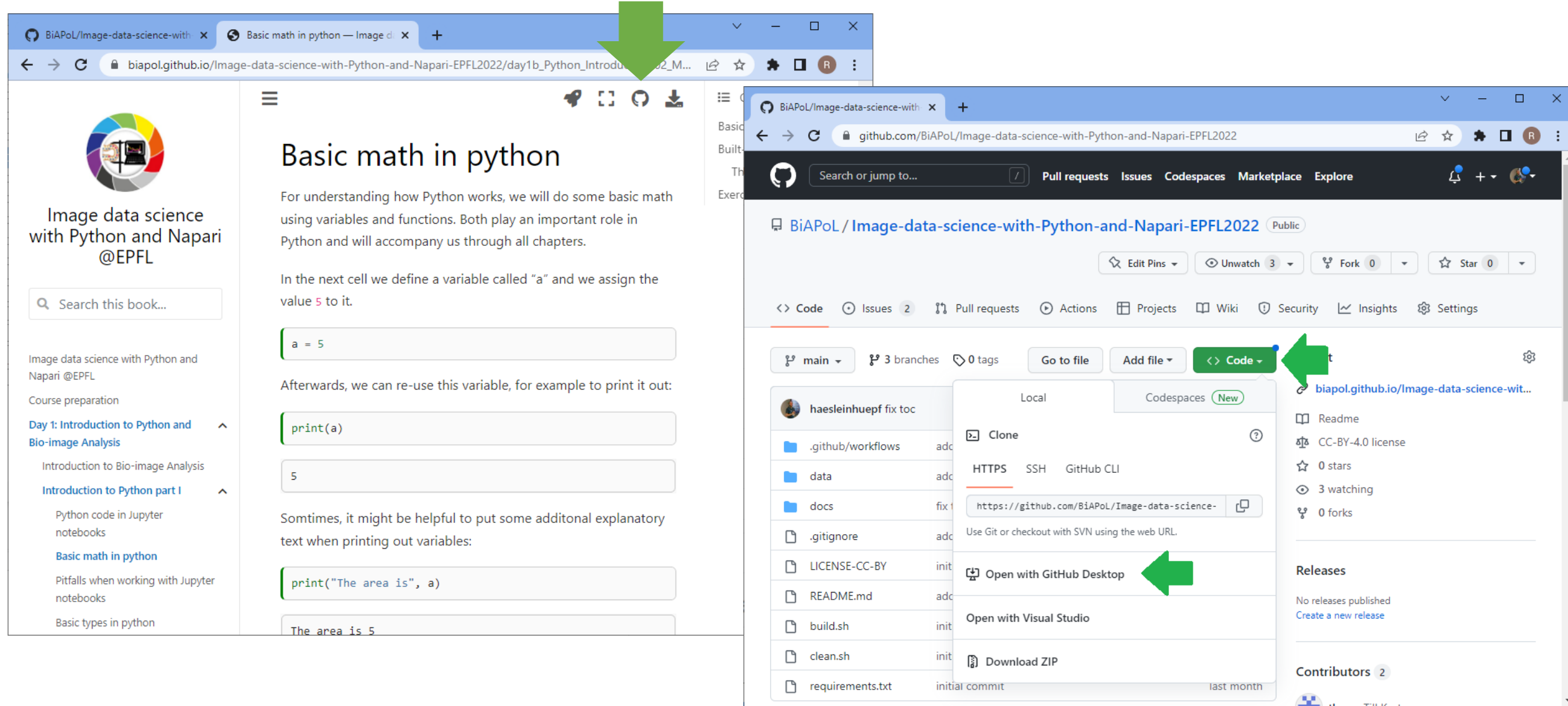
Short break

- Wednesday / Thursday: Group projects
 - Group size: 2-5 people
 - Goals:
 - Develop an image analysis workflow
 - Image segmentation
 - Quantification
 - Plotting
 - Statistics
 - Quality assurance
- Be a brave scientist and document your work well.
 - Hint: Take screenshots!

If your group consists of 5 members; divide your project into sub-projects!

- Friday afternoon (14:00): Group presentations
 - 3 min presentation time + 2 minutes discussion (per group member)
 - Talk about
 - why you chose certain tools,
 - bottlenecks,
 - troubleshooting,
 - solutions
 - Make sure others could reproduce your analysis
 - installation instructions,
 - documentation,
 - hints

Download materials from github



The image shows two overlapping browser windows. The left window displays a Jupyter notebook titled "Basic math in python" from the repository `biapol.github.io/Image-data-science-with-Python-and-Napari-EPFL2022/day1b_Python_Introduction_2_M..._2_M..._2_M...`. The notebook content includes:

```
a = 5
```

Afterwards, we can re-use this variable, for example to print it out:

```
print(a)
```

5

Sometimes, it might be helpful to put some additional explanatory text when printing out variables:

```
print("The area is", a)
```

The area is 5

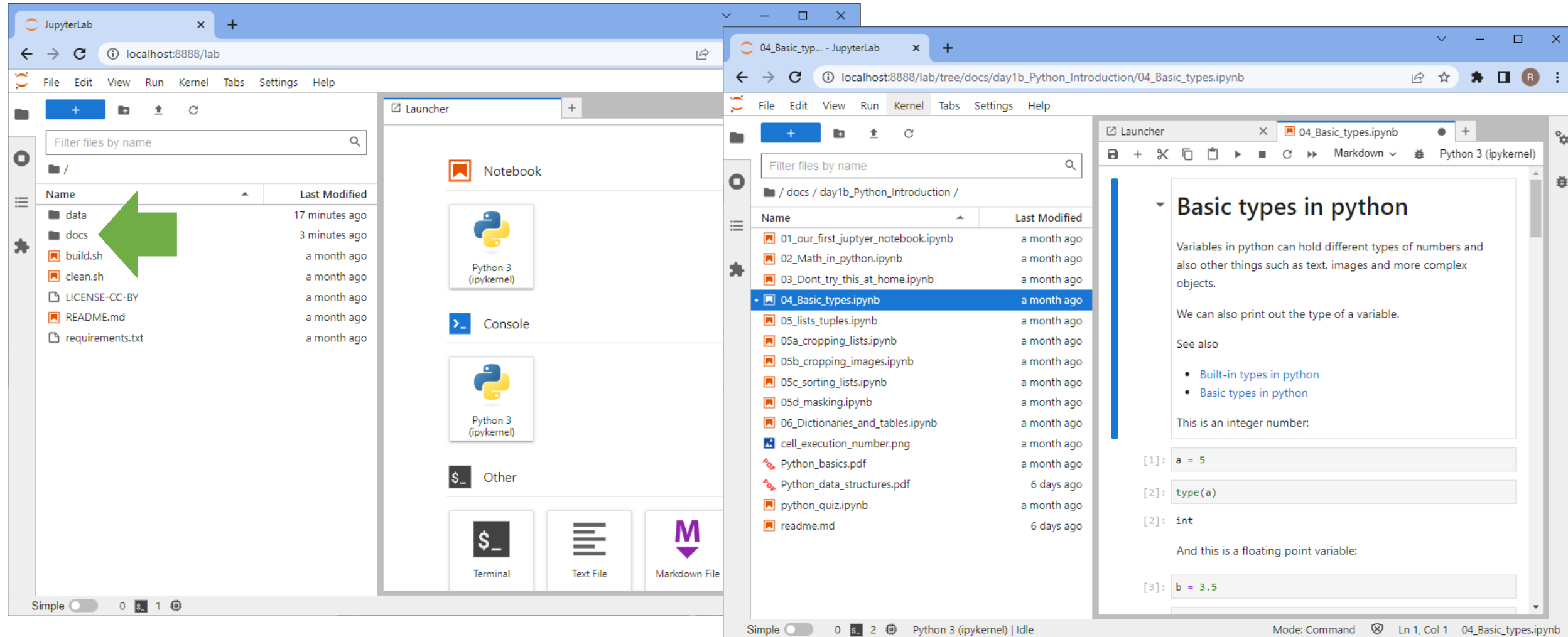
The right window shows the GitHub repository page for `BiAPoL / Image-data-science-with-Python-and-Napari-EPFL2022`. The `Code` tab is selected, showing a file list. A green arrow points to the `<> Code` button, and another green arrow points to the `Open with GitHub Desktop` option in the dropdown menu. The repository details on the right include:

- Readme
- CC-BY-4.0 license
- 0 stars
- 3 watching
- 0 forks
- Releases: No releases published, [Create a new release](#)
- Contributors: 2

Download materials from github

```
conda activate devbio-napari-env
```

```
jupyter lab
```



The image displays two screenshots of the JupyterLab interface. The left screenshot shows the JupyterLab home page with a file browser on the left and a launcher on the right. A green arrow points to the 'docs' folder in the file browser. The right screenshot shows the JupyterLab interface with a notebook open, displaying the 'Basic types in python' notebook.

Left Screenshot: JupyterLab Home Page

- File browser (left):
 - Filter files by name
 - Table with columns: Name, Last Modified
 - Files: data (17 minutes ago), docs (3 minutes ago), build.sh (a month ago), clean.sh (a month ago), LICENSE-CC-BY (a month ago), README.md (a month ago), requirements.txt (a month ago)
- Launcher (right):
 - Notebook: Python 3 (ipykernel)
 - Console: Python 3 (ipykernel)
 - Other: Terminal, Text File, Markdown File

Right Screenshot: JupyterLab Notebook

- File browser (left):
 - Filter files by name
 - Table with columns: Name, Last Modified
 - Files: 01_our_first_jupyter_notebook.ipynb (a month ago), 02_Math_in_python.ipynb (a month ago), 03_Dont_try_this_at_home.ipynb (a month ago), 04_Basic_types.ipynb (a month ago), 05_lists_tuples.ipynb (a month ago), 05a_cropping_lists.ipynb (a month ago), 05b_cropping_images.ipynb (a month ago), 05c_sorting_lists.ipynb (a month ago), 05d_masking.ipynb (a month ago), 06_Dictionaries_and_tables.ipynb (a month ago), cell_execution_number.png (a month ago), Python_basics.pdf (a month ago), Python_data_structures.pdf (6 days ago), python_quiz.ipynb (a month ago), readme.md (6 days ago)
- Notebook (right):
 - 04_Basic_types.ipynb
 - Content: Basic types in python
 - Text: Variables in python can hold different types of numbers and also other things such as text, images and more complex objects. We can also print out the type of a variable. See also: Built-in types in python, Basic types in python. This is an integer number: [1]: a = 5 [2]: type(a) [2]: int And this is a floating point variable: [3]: b = 3.5

Chat room during the course

- To exchange links, code snippets and memes
- <https://imaging.epfl.ch/help/>

