

Quantitative bio-image analysis with Python and Napari

Marcelo Zoccoler, Johannes Müller, Till Korten, Robert Haase



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	Monday	Tuesday	Wednesday	Thursday	Friday
Morning	<ul style="list-style-type: none">• Python basics• Introduction to Bio-image analysis	<ul style="list-style-type: none">• Image Filtering• Image Segmentation	<ul style="list-style-type: none">• Working with tabular data• Plotting	<ul style="list-style-type: none">• Writing good code• Licensing• Collaborative script editing	<ul style="list-style-type: none">• Working with points and surfaces
Afternoon	<ul style="list-style-type: none">• Working with image data• Introduction to Napari	<ul style="list-style-type: none">• Machine learning• Deep learning• Feature extraction	<ul style="list-style-type: none">• Descriptive statistics• Unsupervised machine learning	<ul style="list-style-type: none">• Modular programming• Making your own Napari plugin	<ul style="list-style-type: none">• Bring your own data!
	<ul style="list-style-type: none">• Recap sessions: 9:30• Coffee breaks: 11:00, 15:00• Lunch break: 12:30				

- What's the output of this python code?

```
name = "Robert"  
room_number = 301  
  
print(name + room_number)
```

Robert301

Robert
301

Robert 301

- error -

- You wrote a for-loop like the following. What is it's output?

```
for i in range(0, 10, 2):  
    if i % 3 == 0:  
        print(i)
```

0
6

0
1
2

3
9

- nothing -

- You are accessing this python list. What is the output?

```
my_list = [0, 1, 2, 3, 4, 5, 6, 7, 8, 9]
```

```
selection = my_list[::3]
```

```
print(selection)
```

[]

[0,3,6,9]

[3]

- error -

- You wrote this function / program. What is its output?

```
x = 5
```

```
def heavy_computation(x):  
    x = x + 1  
    return x
```

```
heavy_computation(x)  
print(x)
```

4

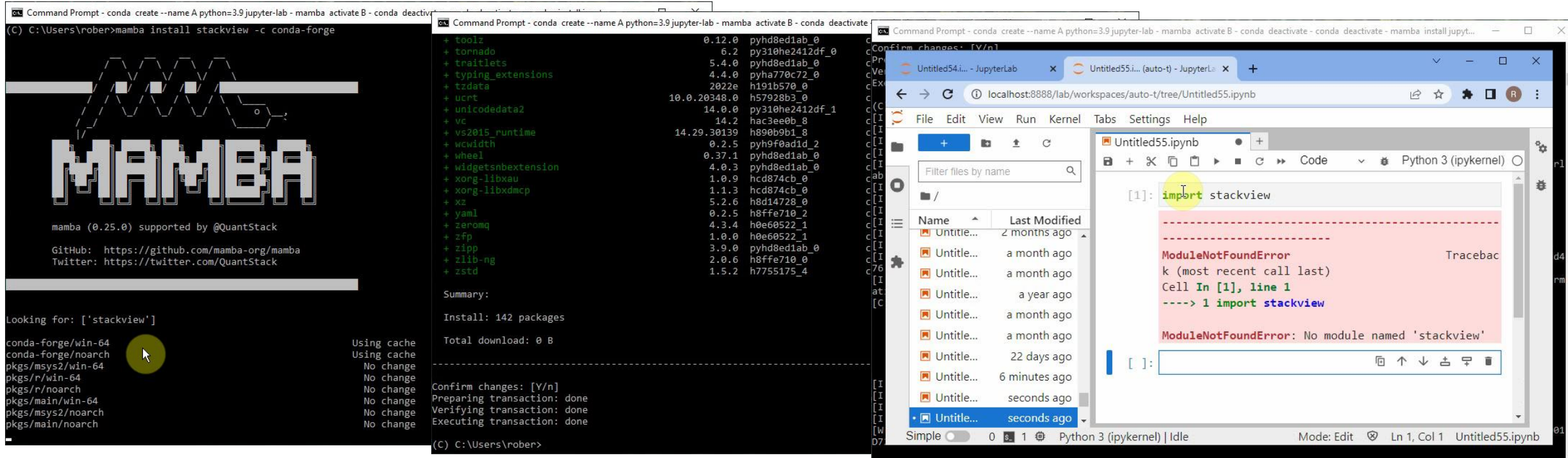
5

6

- error -

Python-introduction quiz

- You just installed a python package and afterwards, it cannot be imported.



```
Command Prompt - conda create --name A python=3.9 jupyter-lab -mamba activate B -conda deactivate
(C) C:\Users\röber>mamba install stackview -c conda-forge

mamba (0.25.0) supported by @QuantStack

GitHub: https://github.com/mamba-org/mamba
Twitter: https://twitter.com/QuantStack

Looking for: ['stackview']

conda-forge/win-64
conda-forge/noarch
pkgs/msys2/win-64
pkgs/r/win-64
pkgs/r/noarch
pkgs/main/win-64
pkgs/msys2/noarch
pkgs/main/noarch

Using cache
Using cache
No change
No change
No change
No change
No change
No change

Summary:
Install: 142 packages
Total download: 0 B

Confirm changes: [Y/n]
Preparing transaction: done
Verifying transaction: done
Executing transaction: done

(C) C:\Users\röber>
```

```
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conda-forge/win-64
conda-forge/noarch
pkgs/msys2/win-64
pkgs/r/win-64
pkgs/r/noarch
pkgs/main/win-64
pkgs/msys2/noarch
pkgs/main/noarch

Using cache
Using cache
No change
No change
No change
No change
No change
No change

Summary:
Install: 142 packages
Total download: 0 B

Confirm changes: [Y/n]
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Verifying transaction: done
Executing transaction: done

(C) C:\Users\röber>
```

```
Confirm changes: [Y/n]
Untitled54.ipynb - JupyterLab
Untitled55.ipynb (auto-t) - JupyterLab
localhost:8888/lab/workspaces/auto-t/tree/Untitled55.ipynb

File Edit View Run Kernel Tabs Settings Help

Filter files by name

Name Last Modified
Untitled... 2 months ago
Untitled... a month ago
Untitled... a month ago
Untitled... a year ago
Untitled... a month ago
Untitled... a month ago
Untitled... 22 days ago
Untitled... 6 minutes ago
Untitled... seconds ago
Untitled... seconds ago

[1]: import stackview

ModuleNotFoundError: No module named 'stackview'
Traceback (most recent call last):
  Cell In [1], line 1
    ----> 1 import stackview

ModuleNotFoundError: No module named 'stackview'
```

- Why?

Broken conda installation

Wrong Python version

Package needs to be installed using pip

Package does not work on Windows