

WEB-BASED TOOLS FOR DATA ANALYSIS: JUPYTERLAB ENVIRONMENT AND WORKFLOW OPTIMIZATION

M Portela, November 3, 2020

1. Operating System

- Linux (e.g., Ubuntu 20.04), OSX Catalina, Windows 10

2. Statistical packages

- Python: install Anaconda – <https://www.anaconda.com>
- R: <https://www.r-project.org>
- Julia: <https://julialang.org>
- Stata: <https://www.stata.com>
- Recommendation: install RStudio

3. Jupyter

3.1 Install jupyter

- **jupyter notebook:** *pip install notebook* or *conda install -c conda-forge notebook*
- **jupyter lab:** *pip install jupyterlab* or *conda install -c conda-forge jupyterlab*

3.2 Available kernels

- Python: this should be the first one installed ipykernel
- R: irkernel

Open an R console, e.g. within RStudio, and execute sequentially, *install.packages('IRkernel')*, *IRkernel::installspec()*

- Julia: IJulia

Run Julia and execute sequentially, *using Pkg, Pkg.add("IJulia")*

- Stata: stata_kernel

Detailed installation by Kyle Barron

Magics – “Magics are programs provided by stata_kernel that enhance the experience of working with Stata in Jupyter.”

3.3 Start ‘notebook’ or ‘lab’

- **jupyter notebook:** *jupyter notebook*
- **jupyter lab:** *jupyter lab*

4. Binder

Running R Projects in MyBinder – Dockerfile Creation With Holepunch

- myBinder
- Gesis Notebooks
- Check the following link on “Configuration Files”

apt.txt - Install packages with apt-get

Examples using the GitHub ‘reisportela/prjs’

- Check this example with RStudio & R 3.6 exercise
- or a setup where we can build a notebook with Python 3.0 or R (you can also run RStudio from this link)



Even better, use GESIS notebooks to launch your image

The concept

5. A gallery of interesting Jupyter Notebooks

- Gallery
- Plotting and Programming in Python
- Exploratory data analysis in Python

6. Books

- Python Data Science Handbook
- Bookdown
- How to Hide all the code cells in Jupyter Notebook Python with single Click

7. Checks

- Binder examples
- Binder Multi-language demo
- mybinder.io

8. SoS NOTEBOOK

- Local installation

pip installation

```
pip3 install sos
```

```
pip3 install sos-pbs
```

```
pip3 install sos-notebook
```

```
pip3 install sos-papermill
pip3 install sos-r
pip3 install sos-julia
pip3 install sos-stata
python3 -m sos_notebook.install
jupyter kernelspec list
jupyter notebook
```

9. Discussion on Julia

- use an environment julia-python
- a multi-language-demo
- Using Julia in Binder: interactive web environment for running your code

By default I will not activate a machine running Python, R and Julia as it takes too long to build the image. I recomend using the link.

10. GESIS Notebooks

- Create a login in GESIS Notebooks and add your machine

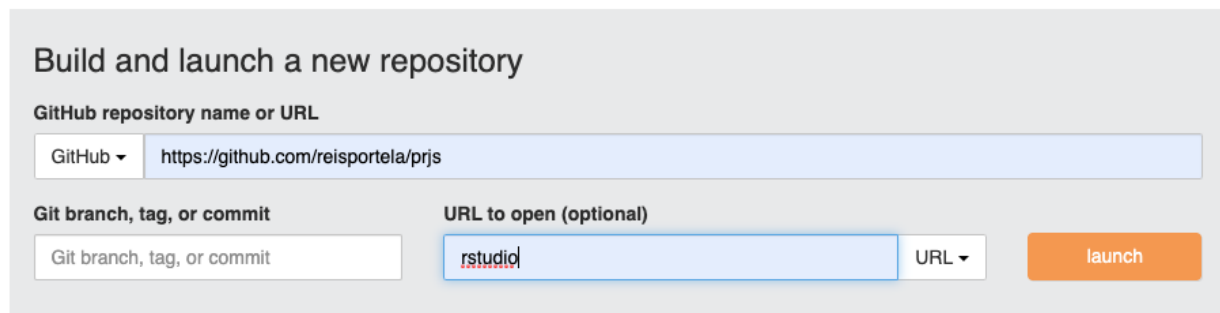


Figure 1: Example

11. Further notes

11.1 Jupyter's extensions

```
conda install -c conda-forge jupyter_contrib_nbextensions
jupyter contrib nbextension install --user
```

11.2 Kaggle Kernels

Kaggle

11.3

How to Hide all the code cells in Jupyter Notebook Python with single Click

11.4 Pandas

Pandas cookbook

R and Dropbox

rdrop2