Open Science Lecture Plan

GIS 710, November 12, 2018

Goal

Get started with open science thinking and tools.

Approach

- Introduction to the topic as a lecture with embedded discussion
- Hands-on exercise with simple example
- More advanced material as a lecture
- Discussion in the class
- (Reflection in a blog post)

Week 1

- Introduction to open science with discussion
    - https://ncsu-geoforall-lab.github.io/open-science-course/lectures/open-science-for-grand-challanges.html
- Short introduction to tools used in the hands-on exercise
    - Python
        - In relation to R
    - GitHub
        - Mention similar platforms: GitLab and Bitbucket
    - Jupyter Notebook and JupyterLab
        - In relation to RStudio
    - Binder (mybinder.org)
- Hands-on exercise:
    - Overall goal/Big picture:
        - Public repository with my research code and a way for everybody to run it
    - Steps:
        - Create repository on GitHub
        - Create and edit files on GitHub (no Git knowledge needed)
        - Write a trivial Python script (a + b or similar)
            - possibly geospatial if easy enough (e.g. with GDAL)
        - Open the repository using Binder with JupyterLab
        - Run the code
        - Modify the code

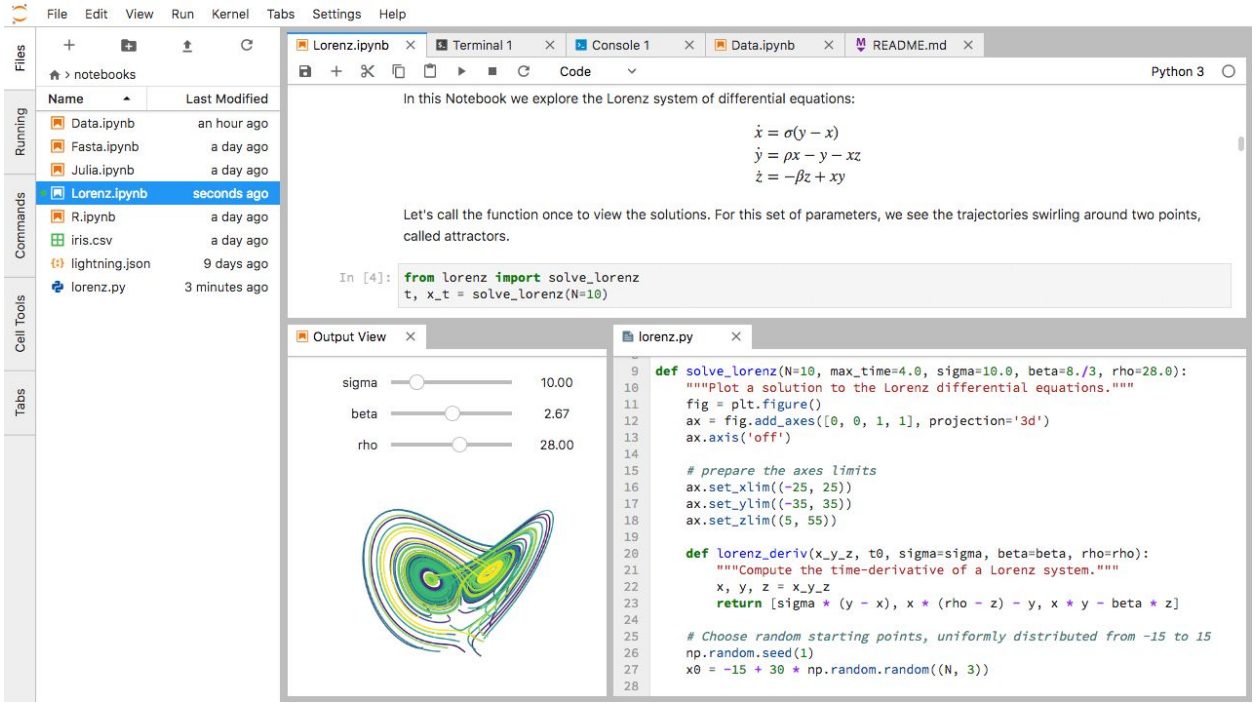
        - Update the repository content

Week 2

- Continue in the hands-on exercise if needed
- Show geospatial and more advanced use cases and tools
    - Based on Jupyter and Binder
    - Using Code Ocean
    - Not using Jupyter-like approach or online services
- Discussion exercise about open science
    - Groups (last time we had 3 groups):
        - For (open science proponents, in favor of open science)
            - Why is open science necessary for science? Why is open science good? (...)
        - Against (status quo proponents, opposed to open science)
            - What are the reasons not to do open science? Is it even realistic? Why is open science bad? Isn't open science more trouble than it's worth? (...)
        - Middle way (pragmatic way? easy route?)
            - Is there something in between? Is something like partial open science sustainable? How to implement something in between to satisfy both groups? Should we implement something transitional for now?

Glossary

JupyterLab



Binder

Turns a Git repository into a collection of interactive notebooks, JupyterLab or RStudio.