

Code Ocean: publishing notebooks reproducibly

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Code Ocean

- ▶ Code Ocean is, more or less:
 - ▶ JupyterLab IDE + modifications
 - ▶ A robust dependency management system
 - ▶ A publishing platform (DOIs & stable URLs)
 - ▶ A sharing platform (embed your 'compute capsules' on webpages)

The screenshot displays the Code Ocean interface, which is a web-based JupyterLab IDE. The top navigation bar includes the Code Ocean logo, a version selector (v2), and a title bar for the current capsule: "Fractal Generation with L-Systems: Jupyter and JupyterLab". The main workspace is divided into three panels:

- Files Panel (Left):** Shows a file tree with a "code" directory containing "notebook.ipynb", "readme.md", and "run.sh", and a "data" directory with a link to "Manage Datasets".
- Code Editor (Center):** Displays the "notebook.ipynb" file, which contains a shell script for rendering the notebook to HTML and executing it. The script includes comments and flags for the Jupyter nbconvert and ExecutePreprocessor.
- Run History Panel (Right):** Shows a list of previous runs, each with a status, a timestamp, and a link to view the output. The runs are labeled "Run 2081022", "Run 2080863", and "Run 2080702".

At the bottom, a terminal window shows the output of the "Run 2081022" command, which includes the execution of the Jupyter nbconvert command and the resulting HTML file.

```
1 #!/bin/bash
2 set -ex
3
4 # Render the notebook to HTML
5 jupyter nbconvert \
6   --ExecutePreprocessor.allow_errors=True \
7   --ExecutePreprocessor.timeout=1 \
8   --output-dir=./results \
9   --execute notebook.ipynb
10
```

Run 2081022/c: X

```
4 + jupyter nbconvert --ExecutePreprocessor.allow_errors=True
  --ExecutePreprocessor.timeout=1 --output-dir=./results --execute
  notebook.ipynb
5
6 [NbConvertApp] Converting notebook notebook.ipynb to html
7
8 [NbConvertApp] Executing notebook with kernel: python3
9
10 [NbConvertApp] Writing 515388 bytes to ./results/notebook.html
11
```

Run (run.sh)

or, launch interactive session

Environment & Dependencies

Publish capsule & results

Run 2081022 0:00:08

less than a minute ago

output 319 B

notebook.html 503.32 KB

Run 2080863 0:00:14

3 minutes ago

output 319 B

notebook.html 503.32 KB

Run 2080702 0:01:04

5 minutes ago

output 177 B

buildLog 264.55 KB

notebook.html 503.32 KB

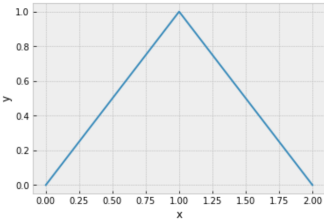
Publishing reproducible Jupyter Notebooks

Notebook + environment + nbconvert = a rendered HTML

notebook.htm x

View Raw

```
In [2]: plt.plot(
        [0, 1, 2], # X-values
        [0, 1, 0] # Y-values
    )
    # The next two lines add labels to the axes.
    plt.xlabel('x')
    plt.ylabel('y');
```



I find it easier to think about lists of coordinate pairs than it is to think about two lists of coordinates. Below is a function below that takes a list of coordinates, converts them to the lists that matplotlib expects, and plots them.

```
In [3]: def plot_coords(coords, bare_plot=False):
        if bare_plot:
            # Turns off the axis markers.
            plt.axis('off')
```

Run (run.sh)

or, launch interactive session

Environment & Dependencies

Code Ocean's published results

November 12, 2018 | Verified

Published Result

9 minutes ago

output

notebook.html

Run 2080863

Code Ocean | 11 minutes ago

Run 2080702

Code Ocean | 14 minutes ago

Reproducibility

Interactive sessions





<https://codeocean.com/2018/11/13/fractal-generation-with-l-systems-colon-jupyter-and-jupyterlab/code>

- ▶ Jupyter
- ▶ JupyterLab
- ▶ Time for a live demonstration

Questions?


- ▶ How is this different than Binder?
- ▶ What is the uploading process like?
- ▶ How are dependencies managed?
- ▶ Is this exportable?

Reference Slide 1: Publishing on Code Ocean:

 v5  [Switch to Old Editor](#) [Back to Capsule](#)  

Basic Info

Language **Stata**


Compute Capsule DOI  <https://doi.org/10.24433/CO.f152260c-bebb-4157-a640-44579452b4e4.v5>

License Info

Software License [MIT license](#)

Data License [No Rights Reserved \(CC0\)](#)

Associated Publication

DOI  <https://doi.org/10.1017/bpp.2018.25>

Title [The contact hypothesis re-evaluated](#)

Publication Date **July 2018**

Journal/Conference **Behavioural Public Policy**


Funded by **National Science Foundation**

Grant Number **1322356**

Citation **PALUCK, ELIZABETH LEVY, SETH A. GREEN, DONALD P. GREEN. "The contact hypothesis re-evaluated." Behavioural Public Policy (2018): 1-30**

Reference Slide 2: Embedding on webpages & within articles

- ▶ You can also embed your published capsule in your article's HTML page or on your personal webpage, a la <https://ieeexplore.ieee.org/document/8410389/algorithms#>

explore.ieee.org/document/8410389  67%     Search

Keywords


Metrics

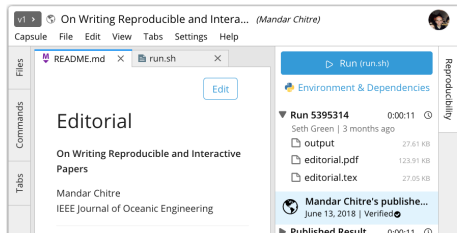
Code & Datasets

Code

Dataset

This article contains code hosted on IEEE's partner, Code Ocean, a cloud-based computational reproducibility platform that enables users to run, modify, and download code from IEEE Xplore articles. A Code Ocean user account is required to run and modify code within the widget below.

Code: On Writing Reproducible and Interactive Papers  Python



On Writing Reproducible and Interactive... (Mandar Chitre)

Capsule File Edit View Tabs Settings Help

Files

Commands

Editorial

On Writing Reproducible and Interactive Papers

Mandar Chitre

IEEE Journal of Oceanic Engineering

Run (run.sh)

Environment & Dependencies

Run 5395314 0:00:11

Seth Green | 3 months ago

output 27.61 KB

editorial.pdf 123.91 KB

editorial.tex 27.05 KB

Mandar Chitre's publishe... June 13, 2018 | Verified

Published Result 0:00:11