

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 JupyterLab IDE. The top bar shows the Code Ocean logo, the title "Fractal Generation with L-Systems: Jupyter and JupyterLab", and various icons for switching editors, settings, and other functions. The left sidebar contains a "Files" panel with a tree view showing a "code" directory containing "notebook.ipynb", "readme.md", and "run.sh", and a "data" directory with a link to "Manage Datasets". Below the sidebar is a "Commands" panel. The main area is a JupyterLab notebook with a code cell containing the following code:

```
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
```

Below the code cell is a terminal window showing the output of the command:

```
4 Run 2081022/c: X
5
6 + jupyter nbconvert --ExecutePreprocessor.allow_errors=True
7 --ExecutePreprocessor.timeout=1 --output-dir=./results --execute
8 notebook.ipynb
9
10 [NbConvertApp] Converting notebook notebook.ipynb to html
11
12 [NbConvertApp] Executing notebook with kernel: python3
13
14 [NbConvertApp] Writing 515388 bytes to ./results/notebook.html
```

On the right side of the interface, there is a "Run (run.sh)" button, a "or, launch interactive session" link, and a "Publish capsule & results" button. Below these are three run logs:

Run ID	Time	Output	File Size
Run 2081022	less than a minute ago	output	319 B
		notebook.html	503.32 KB
Run 2080863	3 minutes ago	output	319 B
		notebook.html	503.32 KB
Run 2080702	5 minutes ago	output	177 B
		buildLog	264.55 KB
		notebook.html	503.32 KB

At the bottom right, there is a "Reproducibility" section with a blue circular icon containing a white document symbol.

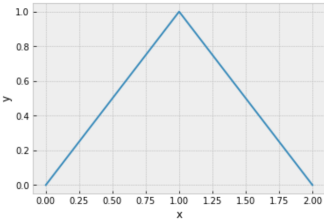
Publishing reproducible Jupyter Notebooks

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**


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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

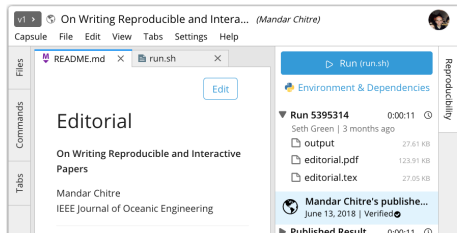
Code & Datasets

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