

Reproducible Self-Publication via PythonT_EX

Introduction and Reference Slides

[github.com/TheChymera/RepSeP]

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Publish From Code, Openly.

- ▶ Transparency → verifiability.
- ▶ Reproducibility → hackability.
- ▶ Version management support:
 - ▶ `diff`-ability.
 - ▶ `blame`-ability.

Publish in a Distributed Model, Free.

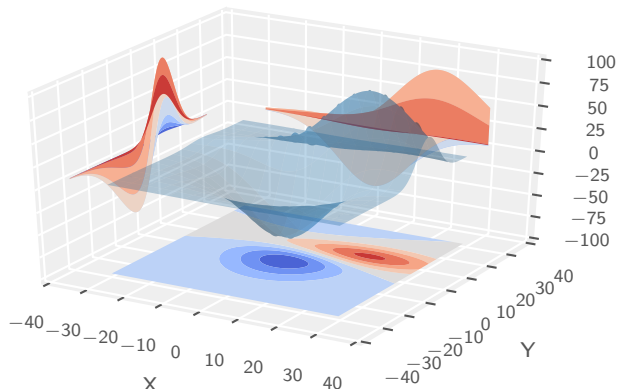
- ▶ No entry barrier → citizen science.
- ▶ No institutional bias → free science.
- ▶ *Less* publication bias → honest science.
- ▶ “Direct Market Access”.

Publish, in a Presentable Format.

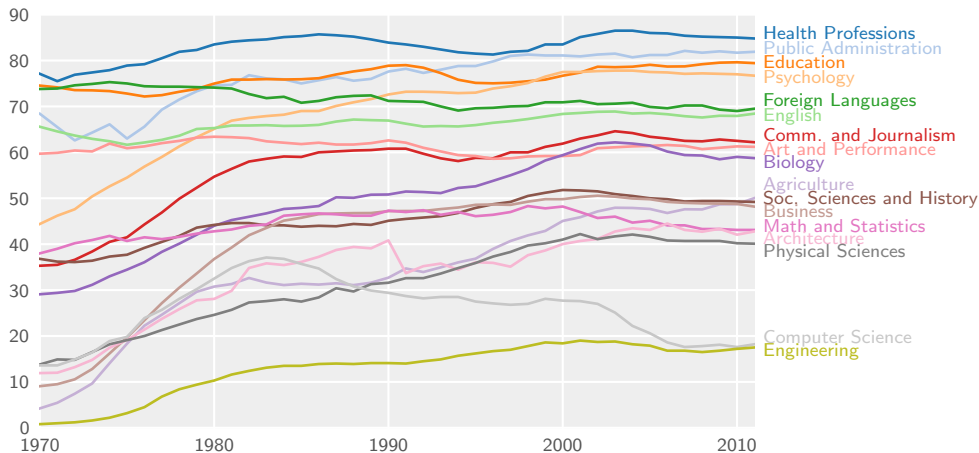
- ▶ Article.
- ▶ Poster.
- ▶ Slides.



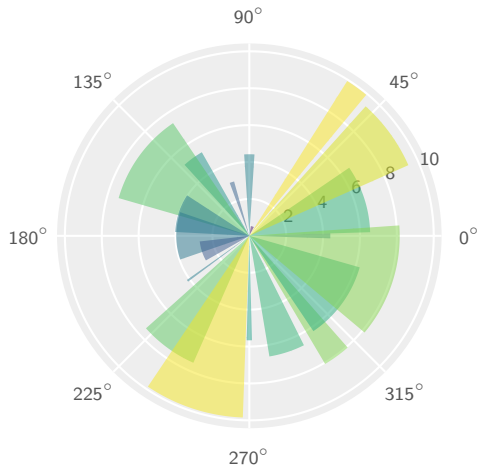
(“Notebooks” integrate poorly with both presentation and development.)



A 3D plot.



Percentage of Bachelor's degrees conferred to women in the U.S.A. by major (1970-2011).



A radar plot.

| | Cage ID | Period [days] | Sucrose Bottle Position | Sucrose Concentration | Sucrose Preference Ratio | Treatment |
|----|---------|---------------|-------------------------|-----------------------|--------------------------|------------|
| 0 | 32 | 0 to 2 | left | 1 | 0.700000 | Fluoxetine |
| 1 | 32 | 2 to 4 | right | 1 | 0.729032 | Fluoxetine |
| 2 | 32 | 4 to 6 | left | 1 | 0.788820 | Fluoxetine |
| 3 | 33 | 0 to 2 | left | 1 | 0.756098 | Fluoxetine |
| 4 | 33 | 2 to 4 | right | 1 | 0.595041 | Fluoxetine |
| 5 | 33 | 4 to 6 | left | 1 | 0.669492 | Fluoxetine |
| 6 | 34 | 0 to 2 | left | 1 | 0.656934 | Control |
| 7 | 34 | 2 to 4 | right | 1 | 0.645455 | Control |
| 8 | 34 | 4 to 6 | left | 1 | 0.574074 | Control |
| 9 | 35 | 0 to 2 | left | 1 | 0.687500 | Control |
| 10 | 35 | 2 to 4 | right | 1 | 0.672566 | Control |
| 11 | 35 | 4 to 6 | left | 1 | 0.742424 | Control |
| 12 | 36 | 0 to 2 | left | 1 | 0.701571 | Control |
| 13 | 36 | 2 to 4 | right | 1 | 0.647541 | Control |
| 14 | 36 | 4 to 6 | left | 1 | 0.725191 | Control |

Sucrose preference table.

Sometimes Less is More

$$F_{4,26} = 7.02, \quad p = 5.6 \times 10^{-4}$$

Typesetting the Previous Radar Plot

```
\py{  
  pytex_fig('scripts/radar.py',  
    label='radar',  
    caption='A radar plot.',  
  )  
}
```

Typesetting the Previous Table

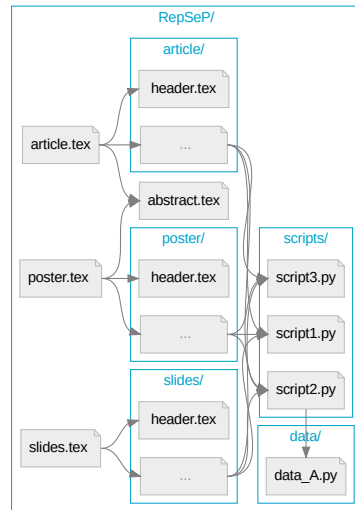
```
\py{  
  pytex_tab('scripts/small_table.py',  
    label='sp',  
    caption='Sucrose preference table.',  
    options='\\tiny',  
    data='data/sucrosepreference.csv',  
  )  
}
```

Typesetting the Previous Inline Statistic

```
\py{  
  pytex_printonly('scripts/drs_activityANOVA.py')  
}
```

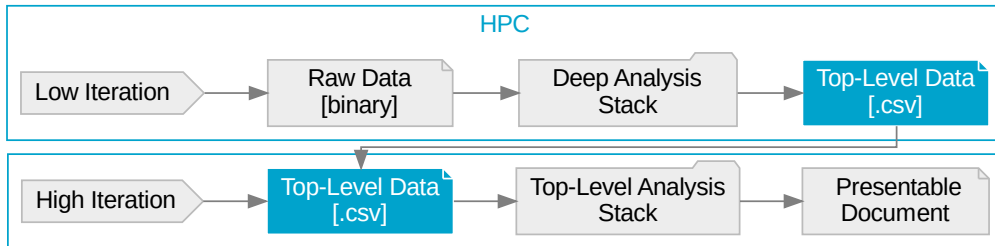
The Framework Topology

- ▶ Reduced information duplication.
- ▶ Continuous development support.



The Workflow

- ▶ Asynchronous offloading for time-consuming analysis.
- ▶ Separate packaging for deep analysis stacks.



Minimal First-Level Dependencies

```
dev-python/matplotlib
dev-python/numpy
dev-python/pandas
>=dev-python/statsmodels-0.9.0
>=dev-tex/pythontex-0.16
dev-texlive/texlive-latex
media-gfx/graphviz
"
```

Following the Package Manager Standard (PMS):

- ▶ Because dependency graphs should never be managed ad hoc.

Co-Author the Reference Implementation

- ▶ The `article.tex` reference document is still in early draft.
- ▶ You can contribute, fork, and publish it however you want.

Gain the Best Exposure for Your most Underexposed Work

- Pay-for-Paywall vs. “Direct Market Access”.



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