Interactive

September 10, 2019

Data Science Workflow < | > Hall of Fame

1 Exploring Subsets Interactively

In this notebook you can select criteria for a subset to inspect and compare to the entire dataset.

Instructions:

1. Run Cell 1, wait for "DONE IN <time>" message before continuing.
2. Run Cell 2, fill out criteria before continuing.
3. Run Cell 3, view report.
4. Repeat steps 2 and 3 with new criteria, if desired.

Prerequisites:

- four final CSV file local in `./data_final`
- all aggregations created by `aggregate.py` local in `./analysis_data`
- ipywidgets
  - `pip install ipywidgets`
- nodejs
  - `conda install nodejs`
- npm
  - `pip install npm`
- labextension
  - for jupyter lab: `jupyter labextension install @jupyter-widgets/jupyterlab-manager)`
  - for jupyter notebook: `notebook extension (jupyter nbextension enable --py widgetsnbextension`

1.1 Run Cell 1

This takes about 10 minutes. Wait for "DONE IN <time>" message before continuing!

[1]:

```
import interactive
import load_data
import datetime
from IPython.core.display import HTML
```

```
# 10 minutes to load data
start = datetime.datetime.now()
data_frames = interactive.data()
end = datetime.datetime.now()
print('\n'+'-'*80+'\n'+'DONE IN {0}'.format(end - start))
```

```
Notebooks loaded in 0:00:33.673711
Repos loaded in 0:00:05.437692
Owners loaded in 0:00:00.777930
Notebook imports loaded in 0:00:43.048986
Errors loaded in 0:00:06.050018
Cell stats loaded in 0:00:04.898696
Cell order loaded in 0:00:35.426024
Outputs loaded in 0:00:06.025272
Statuses loaded in 0:00:03.127332
Cell stats loaded in 0:00:01.842215
Collaboration statuses loaded in 0:00:00.071805
Special functions loaded in 0:00:17.884992
Framework uses loaded in 0:00:11.105059
Educational status loaded in 0:00:00.185618

--------------------------------------------------------------------------------
DONE IN 0:09:20.538907
```

```
[ ]: # query = interactive.interactive(data_frames)
```

1.2 Run Cell 3

This takes about 1 minute. View report! Repeat Cells 2 and 3 with different criteria.

```
[11]: data_frames_sub = interactive.subset(data_frames, query)
      print('\n'+'-'*73+'\n')
      interactive.report_comparisons(data_frames_sub, data_frames)
```

```
Subsetting to Python notebooks pushed between 2011-10-24 and 2019-07-14.
Only looking at notebooks made using Google Colaboratory.
132,162 (3.4%) notebooks fit your criteria.

-------------------------------------------------------------------------
```

1.2.1 Summary Statistics

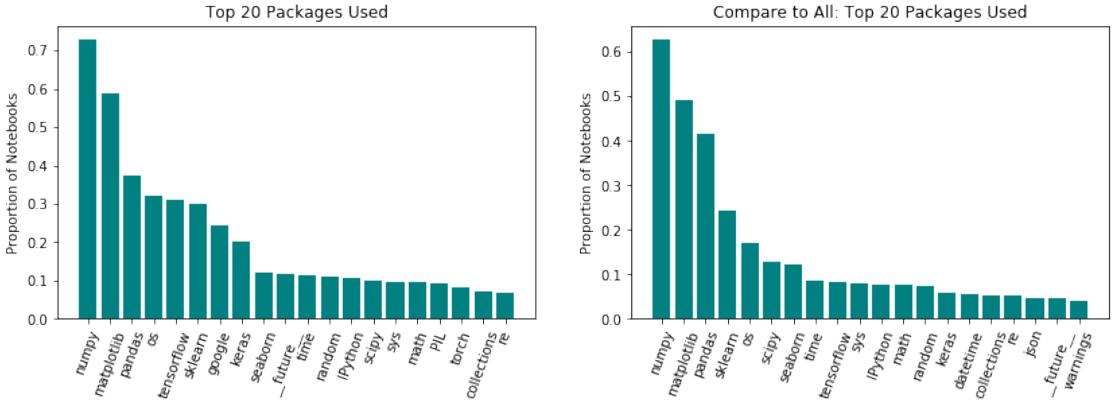
```
        num_cells  forks_count  open_issues_count  stargazers_count  \
mean        31.95          6.6               0.24             11.68   
median      23.00          0.0               0.00              0.00   
min          0.00          0.0               0.00              0.00   
```

```
max       1641.00       5874.0             427.00          18627.00

        subscribers_count  watchers_count  lines_of_code  num_words
mean                 1.51           11.68         198.81     379.86
median               0.00            0.00         133.00      70.00
min                  0.00            0.00           1.00       0.00
max               1375.00        18627.00       37455.00   25923.00
```

Compare to all:

```
        num_cells  forks_count  open_issues_count  stargazers_count  \
mean        28.76         5.56               0.49              9.88
median      19.00         0.00               0.00              0.00
min          0.00         0.00               0.00              0.00
max       1641.00     17634.00            2003.00          22831.00

        subscribers_count  watchers_count  lines_of_code  num_words
mean                 2.13            9.88         147.26     405.18
median               1.00            0.00          88.00      60.00
min                  0.00            0.00           1.00       0.00
max               2446.00        22831.00      462118.00  200404.00
```

1.2.2 Package Use

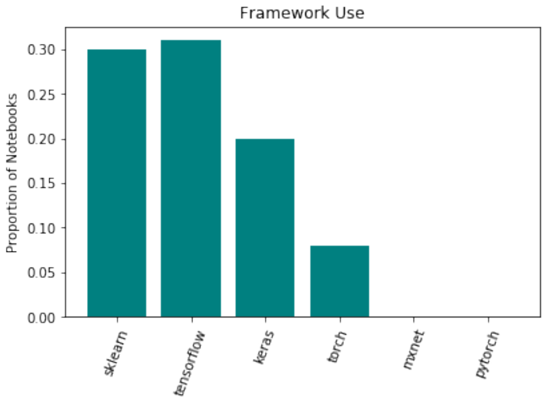


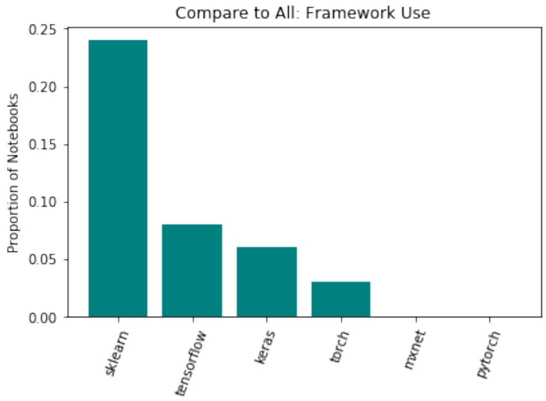
1.2.3 Framework Use

```
67.95% of these notebooks use at least one framework.
```

Compare to all:

```
35.48% of all notebooks use at least one framework.
```



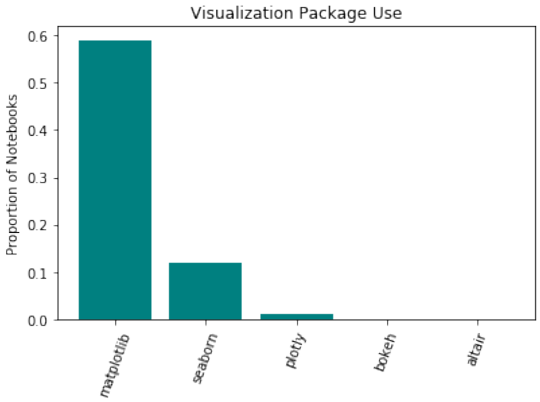


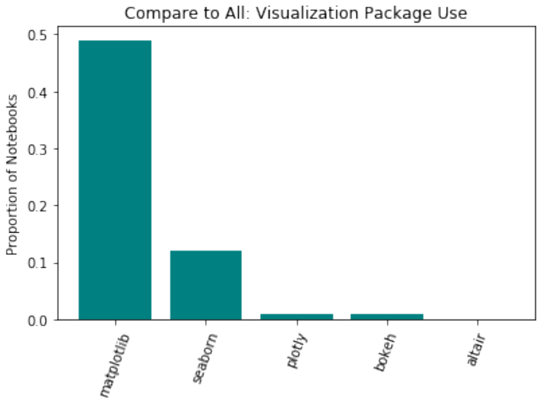
1.2.4 Visualization Package Use

```
59.7% of these notebooks use at least one visualization package.
```

Compare to all:

```
50.71% of all notebooks use at least one visualization package.
```





1.2.5 Number of Errors per Notebook

```
mean       0.19
median     0.00
min        0.00
max       52.00
```

```
Name: num_errors, dtype: float64
```

Compare to all:

```
mean         0.22
median       0.00
min          0.00
max       9104.00
Name: num_errors, dtype: float64
```

1.2.6 Ratio of Markdown to Code

```
mean         4.74
median       0.66
min          0.00
max       8400.00
Name: ratio_wl, dtype: float64
```

Compare to all:

```
mean          6.45
median        0.69
min           0.00
max       18029.00
Name: ratio_wl, dtype: float64
```

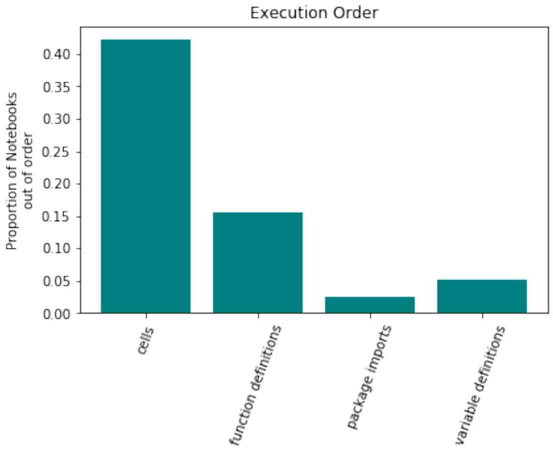
1.2.7 Execution Order

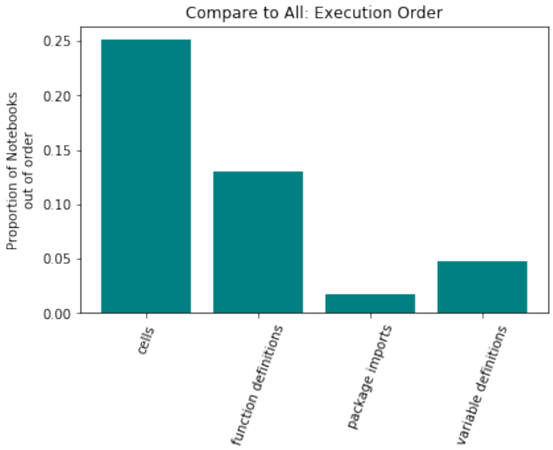
```
57.86% of these notebooks have cells run in order.
84.85% of these notebooks have at least one output, 50.48% of which are run in
order.

80.81% of these notebooks were able to be parsed with Python AST.
Of these, 15.55% had a function used before it was defined, 2.59% had a package
used before it was imported, and 5.1% used a variable before it was defined.
```

Compare to all:

```
74.92% of all notebooks have cells run in order.
84.4% of all notebooks have at least one output, 70.58% of which are run in
order.
```

86.41% of all notebooks were able to be parsed with Python AST.
Of these, 13.0% had a function used before it was defined, 1.8% had a package used before it was imported, and 4.76% used a variable before it was defined.



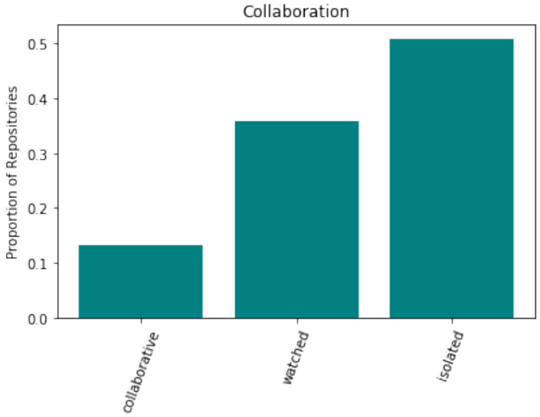


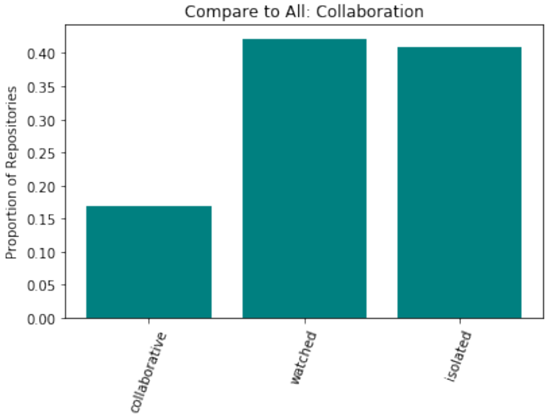
1.2.8 Collaboration

13.08% of these repositories are collaborative, containing 17.56% of these notebooks.

Compare to all:

16.85% of all repositories are collaborative, containing 22.76% of all notebooks.





1.2.9 Educational Status

```
22.15% of these repos are educational, holding 26.26% of these notebooks
```

Compare to all:

```
23.67% of all repos are educational, holding 29.21% of all notebooks
```

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