Interactive

September 4, 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 0:00:28.177134
Repos loaded in 0:00:04.412145
Owners loaded in 0:00:00.694790
Notebook imports loaded in 0:00:41.461839
Errors loaded in 0:00:03.000942
Cell stats loaded in 0:00:01.782402
Cell order loaded in 0:00:27.241687
Outputs loaded in 0:00:01.941591
Statuses loaded in 0:00:00.993714
Cell stats loaded in 0:00:01.961678
Collaboration statuses loaded in 0:00:00.030213
Special functions loaded in 0:00:12.218296
Framework uses loaded in 0:00:08.789084
Educational status loaded in 0:00:00.219593

--------------------------------------------------------------------------------
DONE IN 0:09:19.337819
```

[7]:
```
#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.

[6]:
```
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 2019-01-01 and 2019-07-14.
1,515,109 (39.01%) notebooks fit your criteria.

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

1.2.1 Summary Statistics

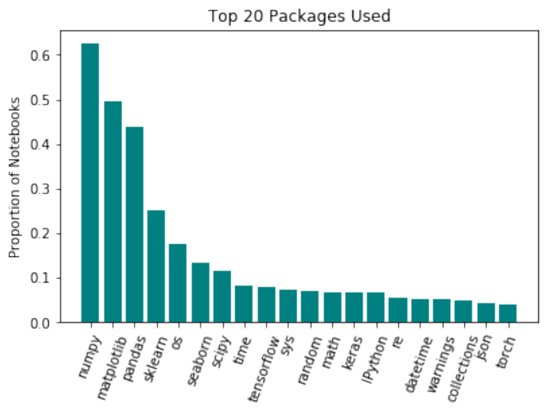
```
        num_cells  forks_count  open_issues_count  stargazers_count  \
mean         29.6        10.07               0.92             19.02
median       19.0         0.00               0.00              0.00
min           0.0         0.00               0.00              0.00
max        1641.0     17634.00            2003.00          22831.00
```

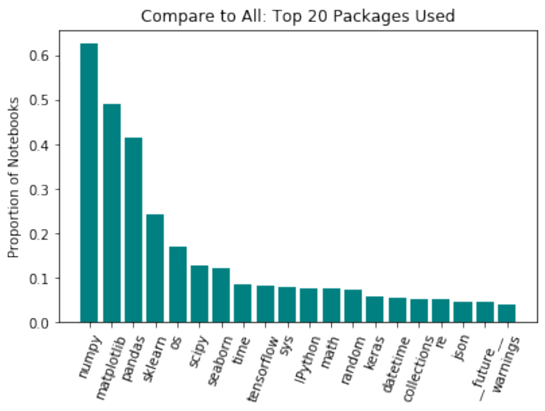
```
        subscribers_count  watchers_count  lines_of_code  num_words
mean                 2.95           19.02         145.55     374.94
median               0.00            0.00          85.00      53.00
min                  0.00            0.00           1.00       0.00
max               2446.00        22831.00       72415.00  200404.00
```

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



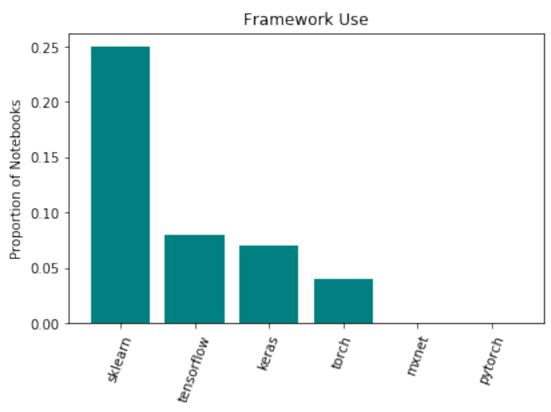


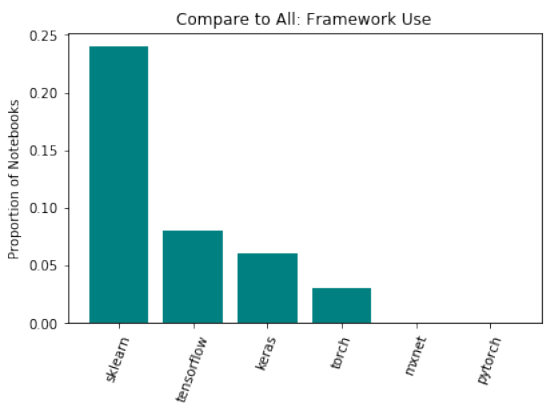
1.2.3 Framework Use

```
37.39% of these notebooks use at least one framework.
```

Compare to all:

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



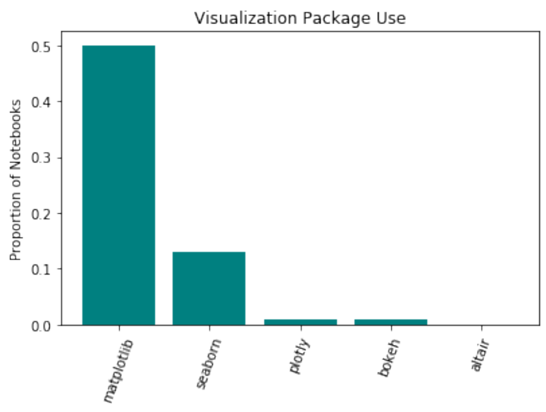


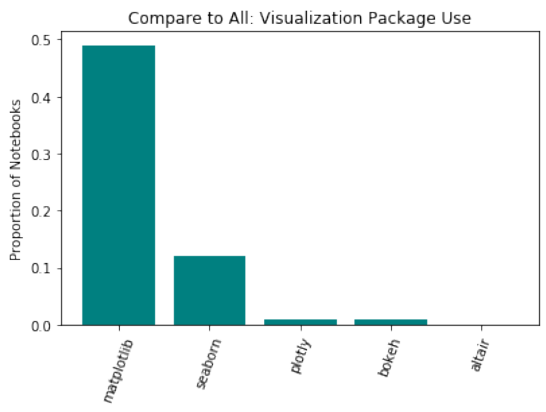
1.2.4 Visualization Package Use

`51.09% of these notebooks use at least one visualization package.`

Compare to all:

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



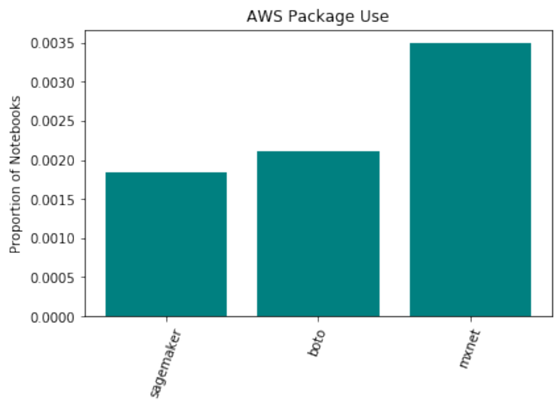


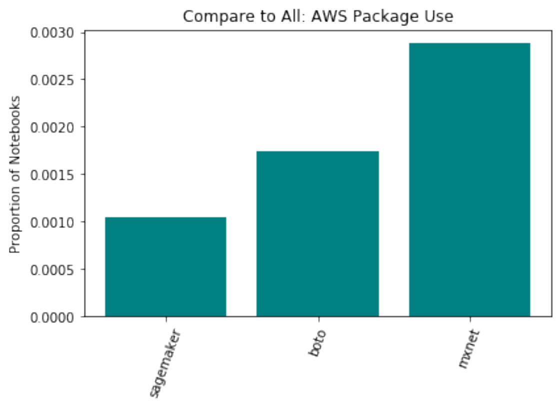
1.2.5 AWS Package Use

`0.629% of these notebooks import at least one of sagemaker, boto, or mxnet.`

Compare to all:

```
0.493% of all notebooks import at least one of sagemaker, boto, or mxnet.
```





1.2.6 Number of Errors per Notebook

```
mean          0.2
median        0.0
min           0.0
max        9104.0
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
```

1.2.7 Ratio of Markdown to Code

```
mean           6.26
median         0.66
min            0.00
max        18029.00
Name: ratio_wl, dtype: float64
```

Compare to all:

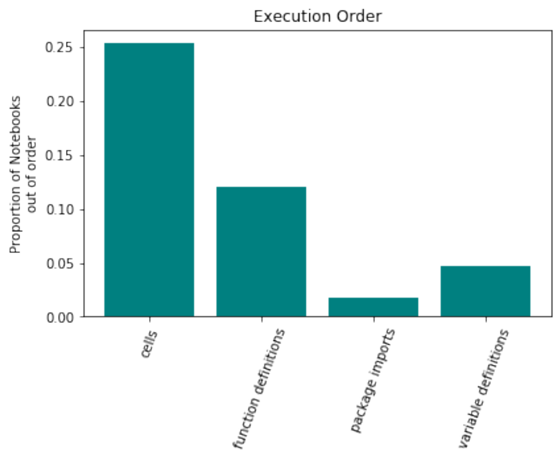
```
mean          6.45
median        0.69
min           0.00
max       18029.00
Name: ratio_wl, dtype: float64
```

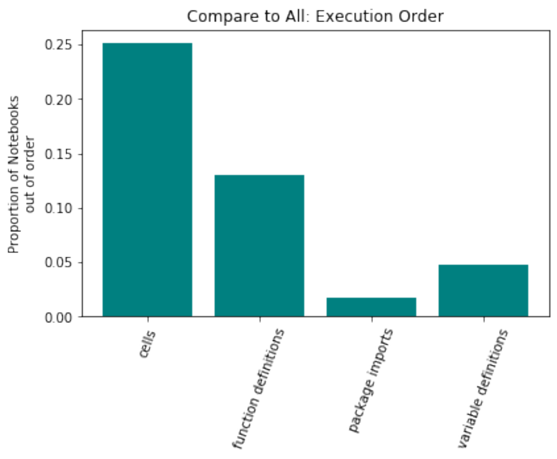
1.2.8 Execution Order

```
74.71% of these notebooks have cells run in order.
83.96% of these notebooks have at least one output, 70.14% of which are run in
order.

85.12% of these notebooks were able to be parsed with Python AST.
Of these, 12.05% had a function used before it was defined, 1.74% had a package
used before it was imported, and 4.72% 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.
```



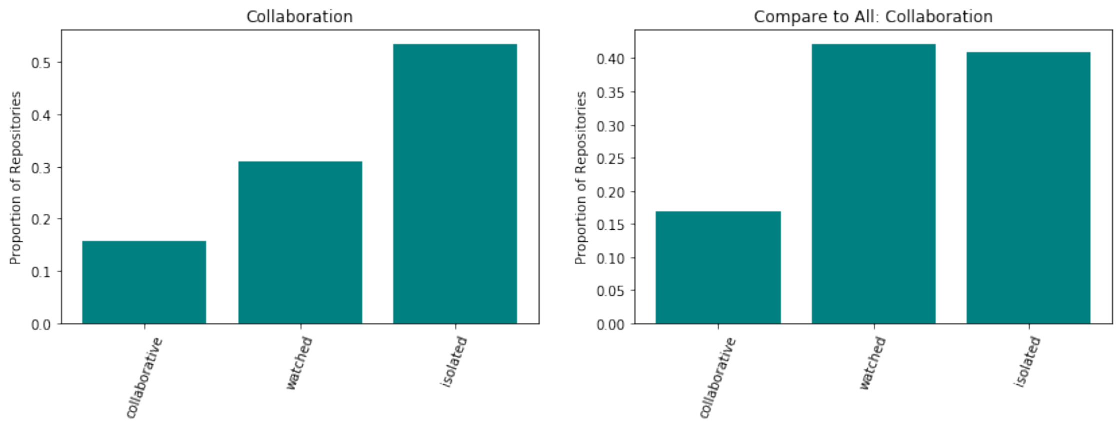


1.2.9 Collaboration

```
15.63% of these repositories are collaborative, containing 21.19% of these
notebooks.
```

Compare to all:

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



1.2.10 Educational Status

```
22.29% of these repos are educational, holding 27.47% of these notebooks
```

Compare to all:

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

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