

Plotly_Cufflinks

June 15, 2024

Plotly is a library that allows you to create interactive plots that you can use in dashboards or websites (you can save them as html files or static images).

0.1 Installation

In order for this all to work, you'll need to install plotly and cufflinks to call plots directly off of a pandas dataframe. These libraries are not currently available through **conda** but are available through **pip**. Install the libraries at your command line/terminal using:

```
pip install plotly
pip install cufflinks
```

**** NOTE:** Make sure you only have one installation of Python on your computer when you do this, otherwise the installation may not work. ******

0.2 Imports and Set-up

```
[1]: pip install plotly
```

```
Requirement already satisfied: plotly in
/home/fischer/anaconda3/lib/python3.11/site-packages (5.9.0)
Requirement already satisfied: tenacity>=6.2.0 in
/home/fischer/anaconda3/lib/python3.11/site-packages (from plotly) (8.2.2)
Note: you may need to restart the kernel to use updated packages.
```

```
[1]: pip install cufflinks
```

```
Collecting cufflinks
  Downloading cufflinks-0.17.3.tar.gz (81 kB)

81.7/81.7 kB 553.6 kB/s eta 0:00:00 kB/s eta
0:00:01:01
  Preparing metadata (setup.py) ... done
Requirement already satisfied: numpy>=1.9.2 in
/home/fischer/anaconda3/lib/python3.11/site-packages (from cufflinks) (1.25.2)
Requirement already satisfied: pandas>=0.19.2 in
/home/fischer/anaconda3/lib/python3.11/site-packages (from cufflinks) (2.1.0)
Requirement already satisfied: plotly>=4.1.1 in
/home/fischer/anaconda3/lib/python3.11/site-packages (from cufflinks) (5.9.0)
Requirement already satisfied: six>=1.9.0 in
```

```

/home/fischer/anaconda3/lib/python3.11/site-packages (from cufflinks) (1.16.0)
Collecting colorlover>=0.2.1 (from cufflinks)
  Downloading colorlover-0.3.0-py3-none-any.whl (8.9 kB)
Requirement already satisfied: setuptools>=34.4.1 in
/home/fischer/anaconda3/lib/python3.11/site-packages (from cufflinks) (67.8.0)
Requirement already satisfied: ipython>=5.3.0 in
/home/fischer/anaconda3/lib/python3.11/site-packages (from cufflinks) (8.12.0)
Requirement already satisfied: ipywidgets>=7.0.0 in
/home/fischer/anaconda3/lib/python3.11/site-packages (from cufflinks) (8.0.4)
Requirement already satisfied: backcall in
/home/fischer/anaconda3/lib/python3.11/site-packages (from
ipython>=5.3.0->cufflinks) (0.2.0)
Requirement already satisfied: decorator in
/home/fischer/anaconda3/lib/python3.11/site-packages (from
ipython>=5.3.0->cufflinks) (5.1.1)
Requirement already satisfied: jedi>=0.16 in
/home/fischer/anaconda3/lib/python3.11/site-packages (from
ipython>=5.3.0->cufflinks) (0.18.1)
Requirement already satisfied: matplotlib-inline in
/home/fischer/anaconda3/lib/python3.11/site-packages (from
ipython>=5.3.0->cufflinks) (0.1.6)
Requirement already satisfied: pickleshare in
/home/fischer/anaconda3/lib/python3.11/site-packages (from
ipython>=5.3.0->cufflinks) (0.7.5)
Requirement already satisfied: prompt-toolkit!=3.0.37,<3.1.0,>=3.0.30 in
/home/fischer/anaconda3/lib/python3.11/site-packages (from
ipython>=5.3.0->cufflinks) (3.0.36)
Requirement already satisfied: pygments>=2.4.0 in
/home/fischer/anaconda3/lib/python3.11/site-packages (from
ipython>=5.3.0->cufflinks) (2.15.1)
Requirement already satisfied: stack-data in
/home/fischer/anaconda3/lib/python3.11/site-packages (from
ipython>=5.3.0->cufflinks) (0.2.0)
Requirement already satisfied: traitlets>=5 in
/home/fischer/anaconda3/lib/python3.11/site-packages (from
ipython>=5.3.0->cufflinks) (5.7.1)
Requirement already satisfied: pexpect>4.3 in
/home/fischer/anaconda3/lib/python3.11/site-packages (from
ipython>=5.3.0->cufflinks) (4.8.0)
Requirement already satisfied: ipykernel>=4.5.1 in
/home/fischer/anaconda3/lib/python3.11/site-packages (from
ipywidgets>=7.0.0->cufflinks) (6.25.0)
Requirement already satisfied: widgetsnbextension~=4.0 in
/home/fischer/anaconda3/lib/python3.11/site-packages (from
ipywidgets>=7.0.0->cufflinks) (4.0.5)
Requirement already satisfied: jupyterlab-widgets~=3.0 in
/home/fischer/anaconda3/lib/python3.11/site-packages (from
ipywidgets>=7.0.0->cufflinks) (3.0.5)

```

Requirement already satisfied: python-dateutil>=2.8.2 in
/home/fischer/anaconda3/lib/python3.11/site-packages (from
pandas>=0.19.2->cufflinks) (2.8.2)

Requirement already satisfied: pytz>=2020.1 in
/home/fischer/anaconda3/lib/python3.11/site-packages (from
pandas>=0.19.2->cufflinks) (2022.7)

Requirement already satisfied: tzdata>=2022.1 in
/home/fischer/anaconda3/lib/python3.11/site-packages (from
pandas>=0.19.2->cufflinks) (2023.3)

Requirement already satisfied: tenacity>=6.2.0 in
/home/fischer/anaconda3/lib/python3.11/site-packages (from
plotly>=4.1.1->cufflinks) (8.2.2)

Requirement already satisfied: comm>=0.1.1 in
/home/fischer/anaconda3/lib/python3.11/site-packages (from
ipykernel>=4.5.1->ipywidgets>=7.0.0->cufflinks) (0.1.2)

Requirement already satisfied: debugpy>=1.6.5 in
/home/fischer/anaconda3/lib/python3.11/site-packages (from
ipykernel>=4.5.1->ipywidgets>=7.0.0->cufflinks) (1.6.7)

Requirement already satisfied: jupyter-client>=6.1.12 in
/home/fischer/anaconda3/lib/python3.11/site-packages (from
ipykernel>=4.5.1->ipywidgets>=7.0.0->cufflinks) (7.4.9)

Requirement already satisfied: jupyter-core!=5.0.*,>=4.12 in
/home/fischer/anaconda3/lib/python3.11/site-packages (from
ipykernel>=4.5.1->ipywidgets>=7.0.0->cufflinks) (5.3.0)

Requirement already satisfied: nest-asyncio in
/home/fischer/anaconda3/lib/python3.11/site-packages (from
ipykernel>=4.5.1->ipywidgets>=7.0.0->cufflinks) (1.5.6)

Requirement already satisfied: packaging in
/home/fischer/anaconda3/lib/python3.11/site-packages (from
ipykernel>=4.5.1->ipywidgets>=7.0.0->cufflinks) (23.0)

Requirement already satisfied: psutil in
/home/fischer/anaconda3/lib/python3.11/site-packages (from
ipykernel>=4.5.1->ipywidgets>=7.0.0->cufflinks) (5.9.0)

Requirement already satisfied: pyzmq>=20 in
/home/fischer/anaconda3/lib/python3.11/site-packages (from
ipykernel>=4.5.1->ipywidgets>=7.0.0->cufflinks) (23.2.0)

Requirement already satisfied: tornado>=6.1 in
/home/fischer/anaconda3/lib/python3.11/site-packages (from
ipykernel>=4.5.1->ipywidgets>=7.0.0->cufflinks) (6.3.2)

Requirement already satisfied: parso<0.9.0,>=0.8.0 in
/home/fischer/anaconda3/lib/python3.11/site-packages (from
jedi>=0.16->ipython>=5.3.0->cufflinks) (0.8.3)

Requirement already satisfied: ptyprocess>=0.5 in
/home/fischer/anaconda3/lib/python3.11/site-packages (from
pexpect>4.3->ipython>=5.3.0->cufflinks) (0.7.0)

Requirement already satisfied: wcwidth in
/home/fischer/anaconda3/lib/python3.11/site-packages (from prompt-
toolkit!=3.0.37,<3.1.0,>=3.0.30->ipython>=5.3.0->cufflinks) (0.2.5)

```

Requirement already satisfied: executing in
/home/fischer/anaconda3/lib/python3.11/site-packages (from stack-
data->ipython>=5.3.0->cufflinks) (0.8.3)
Requirement already satisfied: asttokens in
/home/fischer/anaconda3/lib/python3.11/site-packages (from stack-
data->ipython>=5.3.0->cufflinks) (2.0.5)
Requirement already satisfied: pure-eval in
/home/fischer/anaconda3/lib/python3.11/site-packages (from stack-
data->ipython>=5.3.0->cufflinks) (0.2.2)
Requirement already satisfied: entrypoints in
/home/fischer/anaconda3/lib/python3.11/site-packages (from jupyter-
client>=6.1.12->ipykernel>=4.5.1->ipywidgets>=7.0.0->cufflinks) (0.4)
Requirement already satisfied: platformdirs>=2.5 in
/home/fischer/anaconda3/lib/python3.11/site-packages (from jupyter-
core!=5.0.*,>=4.12->ipykernel>=4.5.1->ipywidgets>=7.0.0->cufflinks) (2.5.2)
Building wheels for collected packages: cufflinks
  Building wheel for cufflinks (setup.py) ... done
  Created wheel for cufflinks: filename=cufflinks-0.17.3-py3-none-any.whl
size=67902
sha256=133246da0b246feb79b4488a7302c7d27ec616093c7de9c78cefe5ade3d25ee
  Stored in directory: /home/fischer/.cache/pip/wheels/c3/bf/8f/afa0730b29e347e8
c1071049f89748c1262e7a14a838820ae6
Successfully built cufflinks
Installing collected packages: colorlover, cufflinks
Successfully installed colorlover-0.3.0 cufflinks-0.17.3
Note: you may need to restart the kernel to use updated packages.

```

[26]: `!pip install --upgrade pandas`

```

Requirement already satisfied: pandas in
/home/fischer/anaconda3/lib/python3.11/site-packages (2.1.0)
Collecting pandas
  Downloading
pandas-2.2.1-cp311-cp311-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (13.0
MB)

13.0/13.0 MB 186.9 kB/s eta 0:00:00m eta
0:00:01[36m0:00:13
Requirement already satisfied: numpy<2,>=1.23.2 in
/home/fischer/anaconda3/lib/python3.11/site-packages (from pandas) (1.25.2)
Requirement already satisfied: python-dateutil>=2.8.2 in
/home/fischer/anaconda3/lib/python3.11/site-packages (from pandas) (2.8.2)
Requirement already satisfied: pytz>=2020.1 in
/home/fischer/anaconda3/lib/python3.11/site-packages (from pandas) (2022.7)
Requirement already satisfied: tzdata>=2022.7 in
/home/fischer/anaconda3/lib/python3.11/site-packages (from pandas) (2023.3)
Requirement already satisfied: six>=1.5 in
/home/fischer/anaconda3/lib/python3.11/site-packages (from python-

```

```
dateutil>=2.8.2->pandas) (1.16.0)
Installing collected packages: pandas
  Attempting uninstall: pandas
    Found existing installation: pandas 2.1.0
    Uninstalling pandas-2.1.0:
      Successfully uninstalled pandas-2.1.0
Successfully installed pandas-2.2.1
```

```
[1]: import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
%matplotlib inline
```

```
[2]: pip install --upgrade bottleneck
```

```
Requirement already satisfied: bottleneck in
/home/fischer/anaconda3/lib/python3.11/site-packages (1.3.5)
Collecting bottleneck
  Downloading Bottleneck-1.3.8-cp311-cp311-
manylinux_2_5_x86_64.manylinux1_x86_64.manylinux_2_17_x86_64.manylinux2014_x86_6
4.whl (358 kB)
```

```
358.7/358.7 kB 168.7 kB/s eta 0:00:00 1m162.1 kB/s
eta 0:00:01
```

```
Requirement already satisfied: numpy in
/home/fischer/anaconda3/lib/python3.11/site-packages (from bottleneck) (1.25.2)
Installing collected packages: bottleneck
  Attempting uninstall: bottleneck
    Found existing installation: Bottleneck 1.3.5
    Uninstalling Bottleneck-1.3.5:
      Successfully uninstalled Bottleneck-1.3.5
Successfully installed bottleneck-1.3.8
Note: you may need to restart the kernel to use updated packages.
```

```
[3]: import sys
print(sys.executable)
```

```
/home/fischer/anaconda3/bin/python
```

```
[2]: from plotly import __version__
from plotly.offline import download_plotlyjs, init_notebook_mode, plot, iplot

print(__version__) # requires version >= 1.9.0
```

```
5.9.0
```

```
[3]: import cufflinks as cf
```

```
[4]: import plotly.offline as py
import plotly.graph_objs as go
py.init_notebook_mode(connected=True)
```

```
[5]: # For offline use
cf.go_offline()
```

0.2.1 Fake Data

```
[6]: df = pd.DataFrame(np.random.randn(100,4),columns='A B C D'.split())
```

```
[7]: df.head()
```

```
[7]:
```

	A	B	C	D
0	0.770523	-1.936991	-1.053078	0.864641
1	-0.589648	-0.115691	-0.599883	-0.255228
2	0.178354	-0.967549	0.682339	0.268118
3	0.596361	-0.035707	0.391548	-0.056207
4	1.727457	1.152026	-1.477756	0.608343

```
[8]: df2 = pd.DataFrame({'Category':['A','B','C'],'Values':[32,43,50]})
```

```
[9]: df2.head()
```

```
[9]:
```

	Category	Values
0	A	32
1	B	43
2	C	50

0.3 Using Cufflinks and iplot()

- scatter
- bar
- box
- spread
- ratio
- heatmap
- surface
- histogram
- bubble

0.4 Scatter

```
[11]: df.iplot(kind='scatter',x='A',y='B',mode='markers',size=10)
```

0.5 Bar Plots

```
[12]: df2.iplot(kind='bar',x='Category',y='Values')
```

```
[14]: df.count().iplot(kind='bar')
```

0.6 Boxplots

```
[15]: df.iplot(kind='box')
```

0.7 3d Surface

```
[13]: df3 = pd.DataFrame({'x':[1,2,3,4,5], 'y':[10,20,30,20,10], 'z':[5,4,3,2,1]})  
df3.iplot(kind='surface',colorscale='rdylbu')
```

```
[14]: #import chart_studio.plotly as py  
import plotly.figure_factory as ff  
import plotly.graph_objects as go
```

```
[15]: a=np.random.randn(100,4)  
a
```

```
[15]: array([[ -1.94576236,  -0.92250569,   2.17836325,   0.89082187],  
            [ -1.26625223,   0.85154669,  -1.00162046,  -0.91794167],  
            [ -0.12196357,   1.43699775,   0.62131092,   1.6522107 ],  
            [ -0.49964379,  -0.04244522,  -1.83070887,   0.75322916],  
            [  1.72231898,   0.40658414,   1.3421768 ,  -0.35676807],  
            [ -1.34740545,   0.7975746 ,  -0.11133994,   0.66068798],  
            [  0.2855484 ,   0.63879149,  -1.05287519,   1.00465652],  
            [  1.62443189,  -0.77055671,   0.03212236,  -1.25766972],  
            [ -1.01407462,  -0.30767638,  -0.12102629,   0.0224246 ],  
            [  0.52259668,   0.09183951,   1.07324249,   0.78814801],  
            [  0.51142384,  -0.92029431,   0.35937439,  -1.18637189],  
            [ -1.26768672,   0.82270008,  -0.9716451 ,   0.88746513],  
            [ -0.44321029,   0.03069351,  -0.75482136,  -0.01651831],  
            [ -0.33793402,   0.60513765,  -1.57344148,  -0.87437398],  
            [  0.29296816,  -0.67962949,  -1.62213301,   0.33616515],  
            [ -0.95266174,  -0.52385248,   0.22986032,  -0.78957357],  
            [  1.1746378 ,   0.99310359,   0.11329302,  -0.0659737 ],  
            [ -0.19479439,   1.63249733,   0.45288075,   0.40350775],  
            [  0.30269886,   1.47112141,  -1.14655171,   0.97043735],  
            [ -1.9862209 ,  -0.53363165,   1.25118848,  -0.55767023],  
            [  0.84316621,  -0.15030259,  -0.04203681,  -0.31114357],  
            [ -0.07765905,   1.02166228,   1.08234866,   0.75102282],  
            [  1.29618447,   1.56363833,   1.407461 ,  -0.3398522 ],  
            [ -1.71204876,  -0.44047709,  -1.56954603,  -0.36501327],  
            [ -1.13801701,  -0.43952678,   0.61480126,  -1.09665318],
```

[0.93441432, 0.32968767, -2.25021643, -1.19659416],
 [-0.69497573, -1.03093746, 1.52597091, 0.30336275],
 [0.40495926, -0.22126056, 0.83952785, -0.06130981],
 [-0.07344612, -0.26115836, 1.23873335, 1.44897007],
 [-0.62669318, -0.49512033, -0.92901928, 1.88863965],
 [0.70735389, -0.0585345, 0.48735552, 0.45843343],
 [1.13690336, -0.98353263, 0.94114259, -1.86751968],
 [0.16256388, -1.78057108, 0.94072261, -1.82979727],
 [0.88604282, 0.91074918, 2.20540256, -0.8254287],
 [1.34360296, -0.23368613, 0.79391463, -0.15456577],
 [0.09451359, -0.58728667, -1.61025234, -0.92711871],
 [-0.21341846, 0.46855948, 1.23477729, 1.35442375],
 [-0.12330832, 2.92093014, 1.46926124, 0.12950259],
 [1.91556846, 0.37626534, 0.22457095, 0.00414832],
 [0.11937789, 1.25321578, 0.66301673, 0.46313937],
 [-0.21775658, -2.09110556, -0.27212461, -0.06891629],
 [-0.71929575, -0.3829865, -0.82129112, -0.05418032],
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 [0.44625239, 1.17776053, -1.40765594, 0.77847379],
 [-1.42334806, -0.41752571, 0.69886362, 3.93794635],
 [-1.54553999, -0.68557495, 1.2359451, -0.34666592],
 [1.4312507, -0.11471948, 0.02072256, 0.06609965],
 [0.91303678, -0.47036173, 1.33248132, -0.27804062],
 [0.73503696, -1.06503719, 1.39201301, -0.42189548],
 [-1.34683361, -0.52692938, -1.59922723, -0.27130899],
 [1.46857482, -1.7513523, 0.36165627, -0.38547885],
 [0.91302169, -1.17733736, 0.30426296, 0.206038],
 [0.87368023, -0.03929476, 0.5870954, -0.80763002],
 [-0.21231181, -2.28771349, -1.84379438, 0.67710224],
 [-1.09323456, -1.07399429, -0.34081674, -0.2647049],
 [0.04035441, -0.91902517, -1.7095253, 0.32182104],
 [-0.69181281, -1.21309588, -2.36069956, 0.67588795],
 [-0.4530015, 0.69272897, -0.31064073, -1.21844215],
 [-1.21105359, 0.21693585, 0.41337082, 0.46555347],
 [-0.14382505, 0.89989938, 1.22623086, -0.89226423],
 [-0.378119, -0.55969548, 0.40325704, -1.47661536],
 [-1.04731707, -1.14950878, 0.45676811, 1.01051987],
 [-1.20239741, -0.82483018, 0.81998157, 0.98211029],
 [1.15055561, 1.90606014, -0.07460377, -0.45143004],
 [-0.32832125, -0.07232474, 0.90981317, -0.25795826],
 [-1.01503336, -1.79346647, 1.0724598, -0.14711613],
 [0.45709045, -0.40225255, -0.48014341, 1.92060922],
 [0.40869391, -0.30181769, 1.69417501, 0.40370297],
 [0.45207338, -0.6876272, 0.82017802, -0.44531084],
 [-0.36540645, -2.02270689, -0.32905788, 0.31904219],
 [-1.32603673, 0.49554805, 1.28240886, 1.7874722],


```

[-0.14100304,  0.82011673,  1.20620009,  0.28103887],
[ 1.4906333 , -0.32371377, -1.19978007,  0.08589096],
[ 0.37397639,  1.41448374,  0.99401716, -0.38924861],
[-0.8988899 ,  0.44667492, -0.19445189,  1.16343888],
[ 0.19737263,  0.86746084, -0.78366334, -1.20395787],
[ 1.70168288,  0.503855 ,  0.47183658, -0.4885454 ],
[ 0.06419945, -1.26636695,  0.48688082, -0.55828996],
[-1.38132015, -0.39347042,  0.04144032,  0.91363689],
[-1.40790966, -0.68890264, -0.66757699,  0.03792011],
[-0.65393262, -0.65799806, -1.05130432,  1.0353276 ],
[ 0.67993286, -0.26957103, -0.70703279, -0.37379464],
[-0.75542073,  1.16335719, -0.77851511, -2.61664596],
[ 0.76166426, -1.27093727, -0.56683158, -0.6640034 ],
[-0.00994066, -0.18570857,  0.56132681,  0.59996111],
[-0.24613071, -1.18982437, -0.3576681 ,  0.9285576 ],
[-0.49984763, -1.3807107 , -0.69273724, -1.63932316],
[ 1.74392659, -0.97032389,  0.21608668, -0.05522244],
[-1.26312339,  0.77748305, -1.53871747, -0.54437328],
[ 0.0138514 ,  0.02554095, -0.1550585 , -0.73177396],
[-0.25191259, -2.23236214, -0.08867323,  0.1625266 ],
[ 0.38600014, -0.82424422, -1.07954663, -1.66307774],
[-0.37323729,  0.22174125,  0.79903898, -1.60728452],
[-0.34479356,  0.46096427, -0.0728764 ,  0.82530808],
[ 0.00507083, -1.45132645,  0.85167013,  1.40159475],
[ 0.87771943,  0.08430701, -0.58485646, -0.69681381],
[ 0.78418631, -0.21989177,  0.76355743,  0.09993902],
[-0.01981386, -0.21520997,  1.65601222,  0.89048998],
[ 1.2425655 , -0.62417333,  0.38555119, -1.47129058]]

```

```

[16]: df4 = pd.DataFrame(a,columns='A B C D'.split())
      df4[['A','B']].iplot()

```

0.8 histogram

```

[17]: df['A'].iplot(kind='hist',bins=25)

```

```

[18]: df.iplot(kind='bubble',x='A',y='B',size='C')

```

0.9 scatter_matrix()

Similar to sns.pairplot()

```

[19]: df.scatter_matrix()

```

```

[ ]:

```

```

[ ]:

```