

Plotly and Cufflink Explorations

Installation and setup

In [18]:

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

```
Requirement already satisfied: plotly in /opt/anaconda3/lib/python3.8/site-packages (4.11.0)
Requirement already satisfied: six in /opt/anaconda3/lib/python3.8/site-packages (from plotly) (1.15.0)
Requirement already satisfied: retrying>=1.3.3 in /opt/anaconda3/lib/python3.8/site-packages (from plotly) (1.3.3)
Requirement already satisfied: cufflinks in /opt/anaconda3/lib/python3.8/site-packages (0.17.3)
Requirement already satisfied: six>=1.9.0 in /opt/anaconda3/lib/python3.8/site-packages (from cufflinks) (1.15.0)
Requirement already satisfied: plotly>=4.1.1 in /opt/anaconda3/lib/python3.8/site-packages (from cufflinks) (4.11.0)
Requirement already satisfied: ipywidgets>=7.0.0 in /opt/anaconda3/lib/python3.8/site-packages (from cufflinks) (7.5.1)
Requirement already satisfied: numpy>=1.9.2 in /opt/anaconda3/lib/python3.8/site-packages (from cufflinks) (1.18.5)
Requirement already satisfied: pandas>=0.19.2 in /opt/anaconda3/lib/python3.8/site-packages (from cufflinks) (1.0.5)
Requirement already satisfied: colorlover>=0.2.1 in /opt/anaconda3/lib/python3.8/site-packages (from cufflinks) (0.3.0)
Requirement already satisfied: setuptools>=34.4.1 in /opt/anaconda3/lib/python3.8/site-packages (from cufflinks) (49.2.0.post20200714)
Requirement already satisfied: ipython>=5.3.0 in /opt/anaconda3/lib/python3.8/site-packages (from cufflinks) (7.16.1)
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Requirement already satisfied: ipykernel>=4.5.1 in /opt/anaconda3/lib/python3.8/site-packages (from ipywidgets>=7.0.0->cufflinks) (5.3.2)
Requirement already satisfied: nbformat>=4.2.0 in /opt/anaconda3/lib/python3.8/site-packages (from ipywidgets>=7.0.0->cufflinks) (5.0.7)
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Requirement already satisfied: pytz>=2017.2 in /opt/anaconda3/lib/python3.8/site-packages (from pandas>=0.19.2->cufflinks) (2020.1)
Requirement already satisfied: appnope; sys_platform == "darwin" in /opt/anaconda3/lib/python3.8/site-packages (from ipython>=5.3.0->cufflinks) (0.1.0)
Requirement already satisfied: pexpect; sys_platform != "win32" in /opt/anaconda3/lib/python3.8/site-packages (from ipython>=5.3.0->cufflinks) (4.8.0)
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Requirement already satisfied: prompt-toolkit!=3.0.0,!<3.0.1,<3.1.0,>=2.0.0 in /opt/anaconda3/lib/python3.8/site-packages (from ipython>=5.3.0->cufflinks) (3.0.5)
Requirement already satisfied: jedi>=0.10 in /opt/anaconda3/lib/python3.8/site-packages (from ipython>=5.3.0->cufflinks) (0.17.1)
Requirement already satisfied: backcall in /opt/anaconda3/lib/python3.8/site-packages (from ipython>=5.3.0->cufflinks) (0.2.0)
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Requirement already satisfied: ipython-genutils in /opt/anaconda3/lib/python3.8/site-packages (from traitlets>=4.3.1->ipywidgets>=7.0.0->cufflinks) (0.2.0)
Requirement already satisfied: tornado>=4.2 in /opt/anaconda3/lib/python3.8/site-packages (from ipykernel>=4.5.1->ipywidgets>=7.0.0->cufflinks) (6.0.4)
Requirement already satisfied: jupyter-client in /opt/anaconda3/lib/python3.8/site-packages (from ipykernel>=4.5.1->ipywidgets>=7.0.0->cufflinks) (6.1.6)
Requirement already satisfied: jupyter-core in /opt/anaconda3/lib/python3.8/site-packages (from nbformat>=4.2.0->ipywidgets>=7.0.0->cufflinks) (4.6.3)
Requirement already satisfied: jsonschema!=2.5.0,>=2.4 in /opt/anaconda3/lib/python3.8/site-
```

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Requirement already satisfied: notebook>=4.4.1 in /opt/anaconda3/lib/python3.8/site-packages (from widgetsnbextension~=3.5.0->ipywidgets>=7.0.0->cufflinks) (6.0.3)
Requirement already satisfied: ptyprocess>=0.5 in /opt/anaconda3/lib/python3.8/site-packages (from pexpect; sys_platform != "win32"->ipython>=5.3.0->cufflinks) (0.6.0)
Requirement already satisfied: wcwidth in /opt/anaconda3/lib/python3.8/site-packages (from prompt-toolkit!=3.0.0,!<3.0.1,<3.1.0,>=2.0.0->ipython>=5.3.0->cufflinks) (0.2.5)
Requirement already satisfied: parso<0.8.0,>=0.7.0 in /opt/anaconda3/lib/python3.8/site-packages (from jedi>=0.10->ipython>=5.3.0->cufflinks) (0.7.0)
Requirement already satisfied: pyzmq>=13 in /opt/anaconda3/lib/python3.8/site-packages (from jupyter-client->ipykernel>=4.5.1->ipywidgets>=7.0.0->cufflinks) (19.0.1)
Requirement already satisfied: pyrsistent>=0.14.0 in /opt/anaconda3/lib/python3.8/site-packages (from jsonschema!=2.5.0,>=2.4->nbformat>=4.2.0->ipywidgets>=7.0.0->cufflinks) (0.16.0)
Requirement already satisfied: attrs>=17.4.0 in /opt/anaconda3/lib/python3.8/site-packages (from jsonschema!=2.5.0,>=2.4->nbformat>=4.2.0->ipywidgets>=7.0.0->cufflinks) (19.3.0)
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Requirement already satisfied: Send2Trash in /opt/anaconda3/lib/python3.8/site-packages (from notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets>=7.0.0->cufflinks) (1.5.0)
Requirement already satisfied: jinja2 in /opt/anaconda3/lib/python3.8/site-packages (from notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets>=7.0.0->cufflinks) (2.11.2)
Requirement already satisfied: prometheus-client in /opt/anaconda3/lib/python3.8/site-packages (from notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets>=7.0.0->cufflinks) (0.8.0)
Requirement already satisfied: nbconvert in /opt/anaconda3/lib/python3.8/site-packages (from notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets>=7.0.0->cufflinks) (5.6.1)
Requirement already satisfied: MarkupSafe>=0.23 in /opt/anaconda3/lib/python3.8/site-packages (from jinja2->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets>=7.0.0->cufflinks) (1.1.1)
Requirement already satisfied: testpath in /opt/anaconda3/lib/python3.8/site-packages (from nbconvert->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets>=7.0.0->cufflinks) (0.4.4)
Requirement already satisfied: bleach in /opt/anaconda3/lib/python3.8/site-packages (from nbconvert->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets>=7.0.0->cufflinks) (3.1.5)
Requirement already satisfied: mistune<2,>=0.8.1 in /opt/anaconda3/lib/python3.8/site-packages (from nbconvert->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets>=7.0.0->cufflinks) (0.8.4)
Requirement already satisfied: pandocfilters>=1.4.1 in /opt/anaconda3/lib/python3.8/site-packages (from nbconvert->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets>=7.0.0->cufflinks) (1.4.2)
Requirement already satisfied: entrypoints>=0.2.2 in /opt/anaconda3/lib/python3.8/site-packages (from nbconvert->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets>=7.0.0->cufflinks) (0.3)
Requirement already satisfied: defusedxml in /opt/anaconda3/lib/python3.8/site-packages (from nbconvert->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets>=7.0.0->cufflinks) (0.6.0)
Requirement already satisfied: packaging in /opt/anaconda3/lib/python3.8/site-packages (from bleach->nbconvert->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets>=7.0.0->cufflinks) (20.4)
Requirement already satisfied: webencodings in /opt/anaconda3/lib/python3.8/site-packages (from bleach->nbconvert->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets>=7.0.0->cufflinks) (0.5.1)
Requirement already satisfied: pyparsing>=2.0.2 in /opt/anaconda3/lib/python3.8/site-packages (from packaging->bleach->nbconvert->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets>=7.0.0->cufflinks) (2.4.7)

In [19]:

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
%matplotlib inline
```

In [20]:

```
import seaborn as sns
```

In [21]:

```
from plotly.offline import iplot
import plotly as py
```

In [22]:

```
import cufflinks as cf
```

In [23]:

```
py.__version__
```

```
Out[23]:
```

```
'4.11.0'
```

```
In [24]:
```

```
df = pd.DataFrame()
```

```
In [25]:
```

```
py.offline.init_notebook_mode(connected=True)
```

```
In [26]:
```

```
cf.go_offline()
```

Line Plot

```
In [27]:
```

```
df = pd.DataFrame(np.random.randn(100, 3), columns=['A', 'B', 'C'])  
df.head()
```

```
Out[27]:
```

	A	B	C
0	-0.420339	0.861218	0.381942
1	-0.949567	-0.727624	1.289393
2	-0.453936	-1.274422	1.032753
3	-0.263438	-1.983077	-2.109609
4	-0.004797	-0.007011	-0.232089

```
In [28]:
```

```
df = df.cumsum()
```

```
In [29]:
```

```
df.head()
```

```
Out[29]:
```

	A	B	C
0	-0.420339	0.861218	0.381942
1	-1.369906	0.133593	1.671335
2	-1.823842	-1.140829	2.704088
3	-2.087280	-3.123906	0.594479
4	-2.092077	-3.130916	0.362390

```
In [30]:
```

```
df.shape
```

```
Out[30]:
```

```
(100, 3)
```

In [31]:

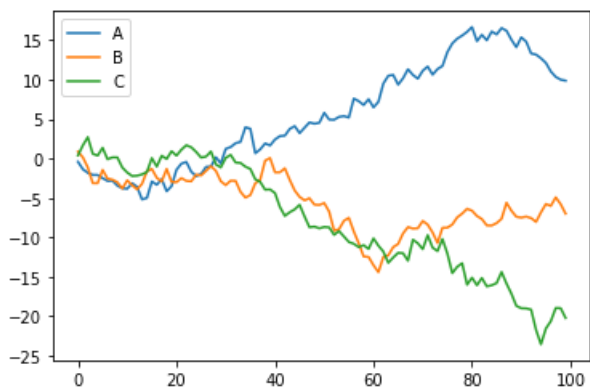
```
df.iplot()
```

In [32]:

```
df.plot()
```

Out[32]:

<matplotlib.axes._subplots.AxesSubplot at 0x11ea8b910>



Scatter Plot

In [33]:

```
df.head()
```

Out[33]:

	A	B	C
0	-0.420339	0.861218	0.381942
1	-1.369906	0.133593	1.671335

	A	B	C
2	-1.823842	-1.140829	2.704088
3	-2.087280	-3.123906	0.594479
4	-2.092077	-3.130916	0.362390

In [34]:

```
df.iplot(x = 'A', y = 'B', mode = 'markers', size = 25, title='Scatter Plot', xTitle='X', yTitle='Y')
```

Bar Plot

In [35]:

```
titanic = sns.load_dataset('titanic')
```

In [36]:

```
titanic.head()
```

Out[36]:

	survived	pclass	sex	age	sibsp	parch	fare	embarked	class	who	adult_male	deck	embark_town	alive	alone
0	0	3	male	22.0	1	0	7.2500	S	Third	man	True	NaN	Southampton	no	False
1	1	1	female	38.0	1	0	71.2833	C	First	woman	False	C	Cherbourg	yes	False
2	1	3	female	26.0	0	0	7.9250	S	Third	woman	False	NaN	Southampton	yes	True
3	1	1	female	35.0	1	0	53.1000	S	First	woman	False	C	Southampton	yes	False
4	0	3	male	35.0	0	0	8.0500	S	Third	man	True	NaN	Southampton	no	True

In [37]:

```
titanic.iplot(kind = 'bar', x = 'sex', y = 'survived', title = 'Titanic')
```

In [38]:

```
titanic['sex'].value_counts()
```

Out[38]:

```
male      577  
female    314  
Name: sex, dtype: int64
```

In [39]:

```
df.iplot(kind = 'bar', barmode='stack', bargap=0.5)
```

In [40]:

```
df.iplot(kind = 'barh', barmode='stack', bargap=0.5)
```

Bar plot and area plot

In [41]:

```
df.iplot(kind = 'box')
```

In [42]:

```
df.iplot(kind = 'area', fill = True)
```

3D Plot

In [43]:

```
df.iplot(kind = 'surface')
```


In [44]:

```
df.iplot(kind = 'surface', colorscale='rdylbu')
```

In [46]:

```
cf.datagen.sinwave(10, 0.25).iplot(kind = 'surface')
```

In [48]:

```
df.iplot(kind = 'spread')
```

In [49]:

```
df.iplot(kind = 'hist', bins = 25, barmode = 'overlay', bargap = 0.5)
```

In [50]:

```
bb = cf.datagen.bubble3d(5,4, mode='stocks')
```

In [51]:

```
bb.head()
```

Out[51]:

	x	y	z	size	text	categories
0	0.784848	0.518397	-1.697900	20	IAX.GF	category1
1	-2.896134	-0.100566	0.698740	73	HML.EZ	category1
2	0.477564	0.753990	0.899789	70	IZA.MI	category1
3	-0.243838	-0.459289	1.107037	84	QAI.XW	category1
4	0.810505	1.209878	0.185179	6	NWV.VN	category2

In [52]:

```
bb.iplot(kind = 'bubble3d', x = 'x', y= 'y', z = 'z', size = 'size')
```

In [53]:

```
df.corr()
```

Out[53]:

	A	B	C
A	1.000000	-0.702952	-0.908599
B	-0.702952	1.000000	0.688565
C	-0.908599	0.688565	1.000000

In [56]:

```
df.corr().iplot(kind = 'heatmap', colorscale='spectral')
```

```
cf.datagen.heatmap(20, 20).iplot(kind = 'heatmap', colorscale = 'spectral',
```

In [55]:

```
cf.datagen.heatmap(20, 20).iplot(kind = 'heatmap', colorscale='spectral')
```