Matplotlib

March 2, 2023

```python
[1]: import numpy as np
     import matplotlib.pyplot as plt
```

1   Checking Graph styles available and setting our own

```python
[2]: plt.style.available
```

```python
[2]: ['Solarize_Light2',
      '_classic_test_patch',
      '_mpl-gallery',
      '_mpl-gallery-nogrid',
      'bmh',
      'classic',
      'dark_background',
      'fast',
      'fivethirtyeight',
      'ggplot',
      'grayscale',
      'seaborn-v0_8',
      'seaborn-v0_8-bright',
      'seaborn-v0_8-colorblind',
      'seaborn-v0_8-dark',
      'seaborn-v0_8-dark-palette',
      'seaborn-v0_8-darkgrid',
      'seaborn-v0_8-deep',
      'seaborn-v0_8-muted',
      'seaborn-v0_8-notebook',
      'seaborn-v0_8-paper',
      'seaborn-v0_8-pastel',
      'seaborn-v0_8-poster',
      'seaborn-v0_8-talk',
      'seaborn-v0_8-ticks',
      'seaborn-v0_8-white',
      'seaborn-v0_8-whitegrid',
      'tableau-colorblind10']
```

```
[3]: plt.style.use("seaborn-v0_8-whitegrid")
```

2 Scatter plot

```
[4]: a=np.random.random(10)
     b=np.random.random(10)
```

```
[5]: a
```

```
[5]: array([0.43155939, 0.31341242, 0.65140362, 0.67915346, 0.5637818 ,
            0.19388455, 0.62938562, 0.17018467, 0.96342387, 0.837609  ])
```

```
[6]: b
```

```
[6]: array([0.88771635, 0.88464302, 0.11313521, 0.99452444, 0.80221212,
            0.44579703, 0.23630279, 0.23291297, 0.24673421, 0.7255819 ])
```

```
[7]: plt.figure(figsize=(10,3))
     plt.scatter(a,b,c="r",marker="X",alpha=0.9)
     plt.xlabel("This is X-Axis")
     plt.ylabel("This is Y-Axis")
     plt.title("X Vs Y")
```

```
[7]: Text(0.5, 1.0, 'X Vs Y')
```
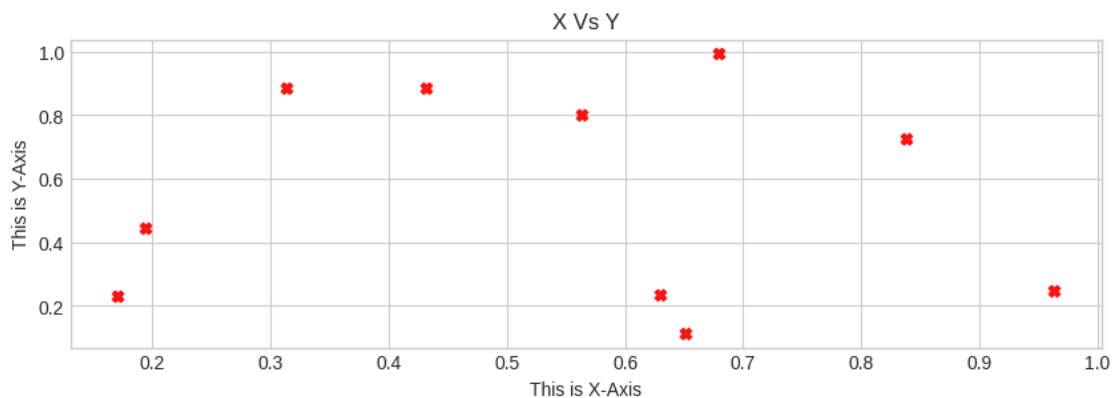

3 Line Graph

```
[8]: a=np.linspace(1,10,15)
```

```
[9]: a
```

```
[9]: array([ 1.        ,  1.64285714,  2.28571429,  2.92857143,  3.57142857,
             4.21428571,  4.85714286,  5.5       ,  6.14285714,  6.78571429,
             7.42857143,  8.07142857,  8.71428571,  9.35714286, 10.        ])
```
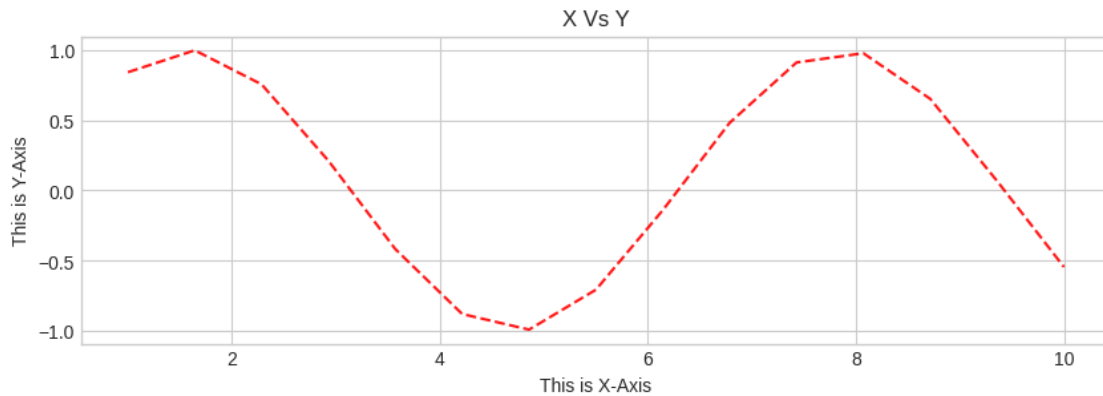
```
[10]: b=np.sin(a)
```

```
[11]: b
```

```
[11]: array([ 0.84147098,  0.99740474,  0.75514703,  0.2114138 , -0.41672165,
             -0.87849033, -0.98954144, -0.70554033, -0.13986806,  0.48164339,
              0.91086952,  0.97645142,  0.65220699,  0.06758355, -0.54402111])
```

```
[12]: plt.figure(figsize=(10,3))
      plt.plot(a,b,"--r",alpha=0.9)
      plt.xlabel("This is X-Axis")
      plt.ylabel("This is Y-Axis")
      plt.title("X Vs Y")
```

```
[12]: Text(0.5, 1.0, 'X Vs Y')
```


4   BarGraph

```
[13]: x=["Dhoni","kohli","Rohit","Rahul","SKY"]
```

```
[14]: x
```

```
[14]: ['Dhoni', 'kohli', 'Rohit', 'Rahul', 'SKY']
```

```
[15]: runs=[34,56,48,21,32]
```

```
[16]: runs
```

[16]: [34, 56, 48, 21, 32]

```python
[17]: plt.figure(figsize=(10,3))
      plt.bar(x,runs,color="r")
      plt.xlabel("This is X-Axis")
      plt.ylabel("This is Y-Axis")
      plt.title("X Vs Y")
```

[17]: Text(0.5, 1.0, 'X Vs Y')

5 BarGraph Horizontally

```python
[18]: plt.figure(figsize=(10,3))
      plt.barh(x,runs,color="r")
      plt.xlabel("This is X-Axis")
      plt.ylabel("This is Y-Axis")
      plt.title("X Vs Y")
```
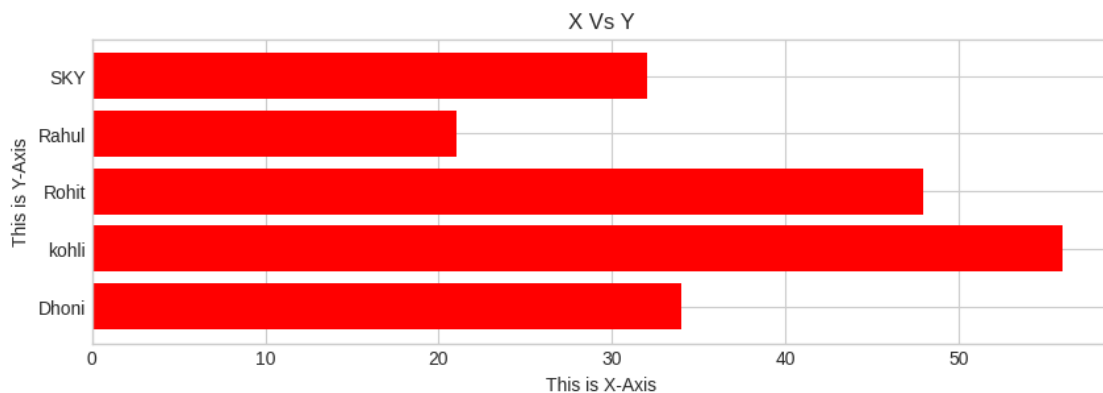
[18]: Text(0.5, 1.0, 'X Vs Y')
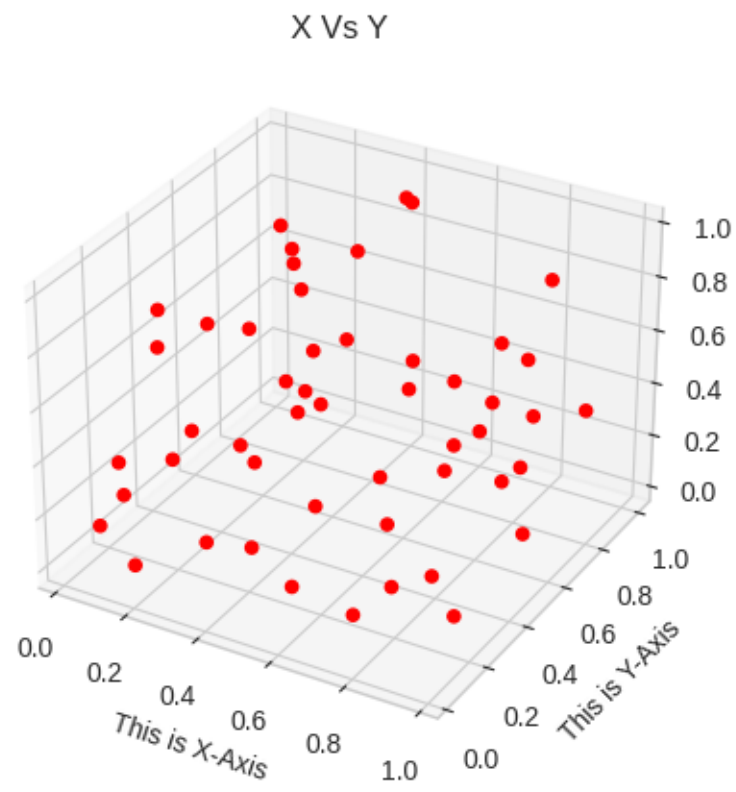
6 3D Graphs

```
[19]: x=np.random.random(50)
      y=np.random.random(50)
      z=np.random.random(50)
```

```
[20]: x,y,z
```

```
[20]: (array([0.05407193, 0.2919034 , 0.02301268, 0.91481567, 0.94594856,
              0.92286932, 0.04710829, 0.61383837, 0.87317226, 0.15056303,
              0.85424678, 0.30953134, 0.85036639, 0.65140951, 0.97312536,
              0.62891968, 0.44133626, 0.83405582, 0.68760033, 0.41547213,
              0.14266916, 0.87409347, 0.05073664, 0.23533837, 0.33045159,
              0.59540792, 0.97786594, 0.14446761, 0.67671339, 0.21764321,
              0.82378277, 0.43921429, 0.81348021, 0.08692454, 0.50821011,
              0.89354573, 0.44707926, 0.42648122, 0.30000755, 0.71621802,
              0.48216114, 0.32702996, 0.5979772 , 0.04386359, 0.81660977,
              0.1332141 , 0.85788738, 0.49369207, 0.0947302 , 0.44226974]),
       array([0.08466837, 0.18441484, 0.99461776, 0.16867887, 0.22228676,
              0.61792263, 0.42408726, 0.29933189, 0.34364739, 0.84285633,
              0.03039154, 0.18057881, 0.093213  , 0.89905516, 0.83475079,
              0.5721703 , 0.14740535, 0.9118237 , 0.89487846, 0.20875574,
              0.04132123, 0.29980446, 0.19654495, 0.65764168, 0.57474744,
              0.21097438, 0.48231261, 0.09511429, 0.38327317, 0.72234996,
              0.43877869, 0.6573474 , 0.70898893, 0.31360056, 0.32680976,
              0.67086212, 0.39228474, 0.95025251, 0.60459403, 0.14966117,
              0.37703138, 0.33750298, 0.06863938, 0.5202906 , 0.68724256,
              0.23652435, 0.78258189, 0.837951  , 0.66695402, 0.89123417]),
       array([0.13288186, 0.09802682, 0.67055444, 0.24948836, 0.073357  ,
              0.73373367, 0.14462301, 0.89670968, 0.81733256, 0.66304033,
              0.68288832, 0.91505604, 0.23791678, 0.16947499, 0.42008159,
              0.54235756, 0.16861298, 0.80543319, 0.29846715, 0.43299907,
              0.43832099, 0.52526549, 0.16897317, 0.36246722, 0.79749698,
              0.71570662, 0.45206656, 0.01268098, 0.18452882, 0.81588402,
              0.5015134 , 0.92592484, 0.17268036, 0.79807232, 0.79849775,
              0.03107818, 0.58395622, 0.92470307, 0.30427321, 0.03167402,
              0.17647567, 0.80325988, 0.14701125, 0.18853867, 0.70847022,
              0.72758175, 0.38863794, 0.42153855, 0.05137912, 0.98239007]))
```

```
[21]: fig=plt.figure()
      ax=fig.add_subplot(projection="3d")
      ax.scatter(x,y,z,alpha=1.0,c="r")
      plt.xlabel("This is X-Axis")
      plt.ylabel("This is Y-Axis")
```

```
plt.title("X Vs Y")
plt.show()
```

X Vs Y

[ ]: