Matplotlib sample code

ddas.tech/matplotlib-sample-code/

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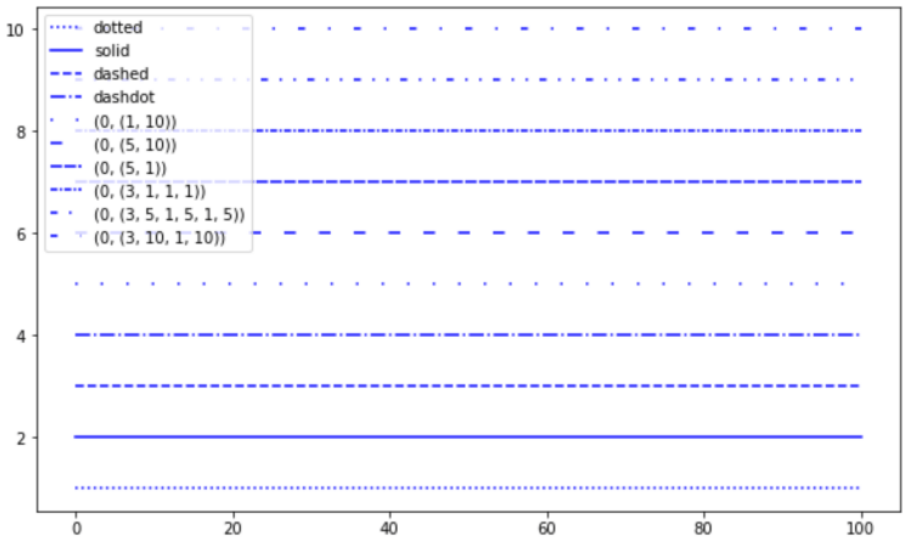
Below is an archive of sample Matplotlib plots in python

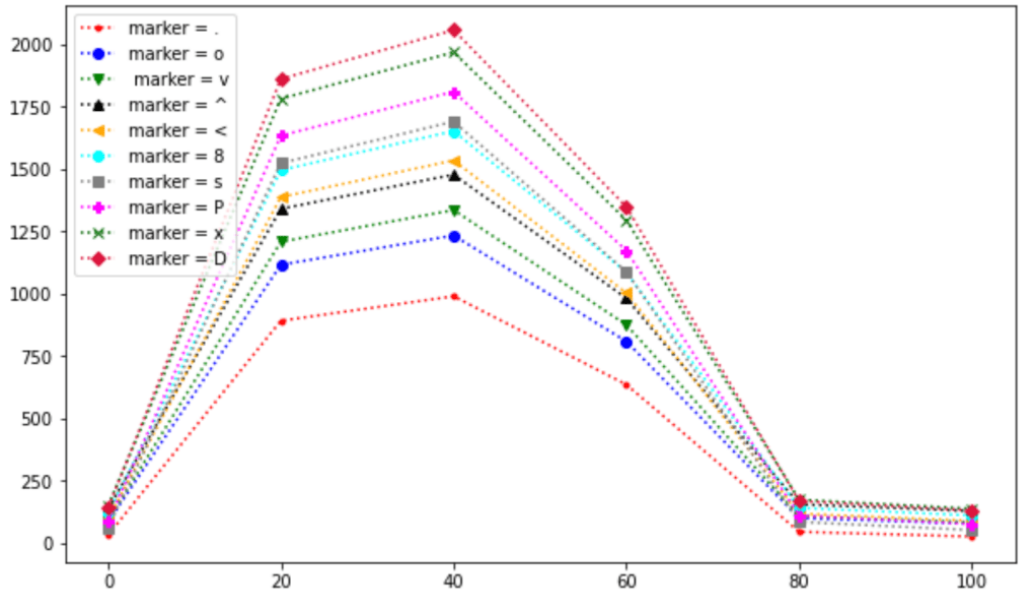
Matplotlib Different Line styles



Matplotlib- Different Line styles

```
import matplotlib.pyplot as plt
import numpy as np
fig = plt.figure(figsize = (10, 6))
X = np.linspace(0, 100, 10)

Y1 = np.full(10, 1)
Y2 = np.full(10, 2)
Y3 = np.full(10, 3)
Y4 = np.full(10, 4)
Y5 = np.full(10, 5)
Y6 = np.full(10, 6)
Y7 = np.full(10, 7)
Y8 = np.full(10, 8)
Y9 = np.full(10, 9)
Y10 = np.full(10, 10)

plt.plot(X, Y1,linestyle= "dotted",linewidth=1.5, color='blue')
plt.plot(X, Y2,linestyle="solid",linewidth=1.5, color='blue')
plt.plot(X, Y3,linestyle="dashed",linewidth=1.5, color='blue')
plt.plot(X, Y4,linestyle="dashdot",linewidth=1.5, color='blue')
plt.plot(X, Y5,linestyle=(0, (1, 10)),linewidth=1.5, color='blue')
plt.plot(X, Y6,linestyle=(0, (5, 10)),linewidth=1.5, color='blue')
plt.plot(X, Y7,linestyle=(0, (5, 1)),linewidth=1.5, color='blue')
plt.plot(X, Y8,linestyle=(0, (3, 1, 1, 1)),linewidth=1.5, color='blue')
plt.plot(X, Y9,linestyle=(0, (3, 5, 1, 5, 1, 5)),linewidth=1.5, color='blue')
plt.plot(X, Y10,linestyle=(0, (3, 10, 1, 10)),linewidth=1.5, color='blue')

plt.legend(['dotted', 'solid','dashed','dashdot','(0, (1, 10))','(0, (5, 10))','(0,
(5, 1))','(0, (3, 1, 1, 1))','(0, (3, 5, 1, 5, 1, 5))','(0, (3, 10, 1, 10))'],
loc='upper left')
```

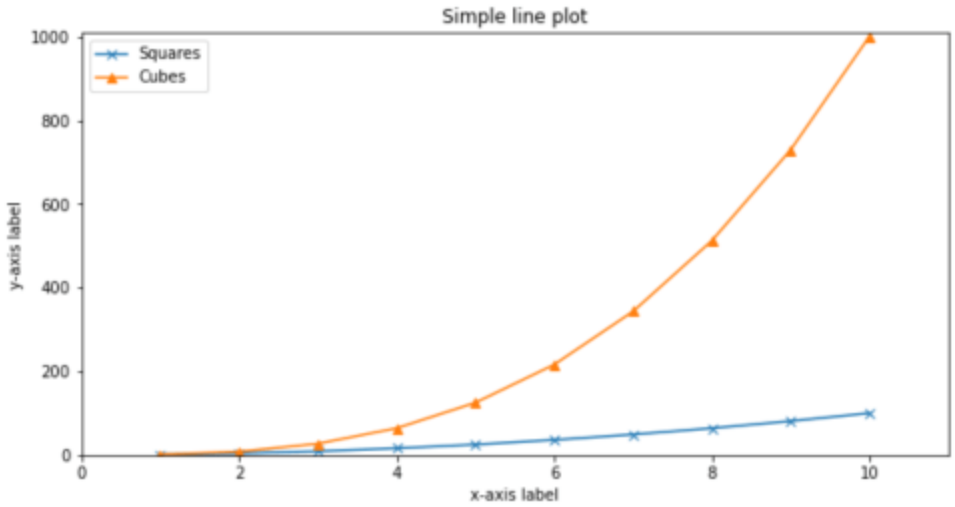
Matplotlib – Different Marker Styles



matplotlib – Different Marker Styles

```
import matplotlib.pyplot as plt
import numpy as np
from numpy import random

fig = plt.figure(figsize = (10, 6))
X = np.linspace(0, 100, 6)
Y1 =random.randint(1000, size=(6))
Y2 = 1.2 * Y1 + random.randint(100)
Y3 = 1.3 * Y1 + random.randint(100)
Y4 = 1.4 * Y1 + random.randint(100)
Y5 = 1.5 * Y1 + random.randint(100)
Y6 = 1.6 * Y1 + random.randint(100)
Y7 = 1.7 * Y1 + random.randint(100)
Y8 = 1.8 * Y1 + random.randint(100)
Y9 = 1.9 * Y1 + random.randint(100)
Y10 = 2.0 * Y1 + random.randint(100)
Y11 = 2.1 * Y1 + random.randint(100)

plt.plot(X, Y1,linestyle= 'dotted',marker = '.',linewidth=1.5, color='red')
plt.plot(X, Y2,linestyle= 'dotted',marker = 'o',linewidth=1.5, color='blue')
plt.plot(X, Y3,linestyle= 'dotted',marker = 'v',linewidth=1.5, color='green')
plt.plot(X, Y4,linestyle= 'dotted',marker = '^',linewidth=1.5, color='black')
plt.plot(X, Y5,linestyle= 'dotted',marker = '<',linewidth=1.5, color='orange')
plt.plot(X, Y6,linestyle= 'dotted',marker = '8',linewidth=1.5, color='cyan')
plt.plot(X, Y7,linestyle= 'dotted',marker = 's',linewidth=1.5, color='grey')
plt.plot(X, Y8,linestyle= 'dotted',marker = 'P',linewidth=1.5, color='magenta')
plt.plot(X, Y9,linestyle= 'dotted',marker = 'x',linewidth=1.5, color='darkgreen')
plt.plot(X, Y10,linestyle= 'dotted',marker = 'D',linewidth=1.5, color='crimson')

plt.legend(['marker = .', 'marker = o',' marker = v','marker = ^','marker = <',
'marker = 8','marker = s', 'marker = P', 'marker = x','marker = D'], loc='upper
left')
```

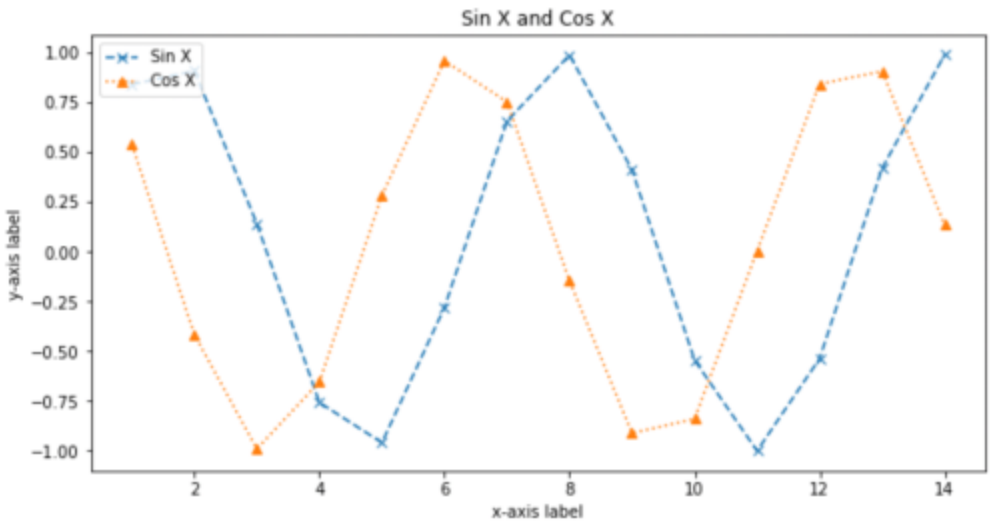
Matplotlib – Line Plot



matplotlib – Simple Line Plot

```
import matplotlib.pyplot as plt
import numpy as np
from numpy import random

fig = plt.figure(figsize = (10, 5))
x = list(range(1,11))
y_1 = [x**2 for x in x]
y_2 = [x**3 for x in x]
plt.plot(x, y_1, marker='x')
plt.plot(x, y_2, marker='^')

plt.xlim([0, len(x)+1])
plt.ylim([0, max(y_1+y_2) + 10])
plt.xlabel('x-axis label')
plt.ylabel('y-axis label')

plt.title('Simple line plot')
plt.legend(['Squares', 'Cubes'], loc='upper left')

plt.show()
```

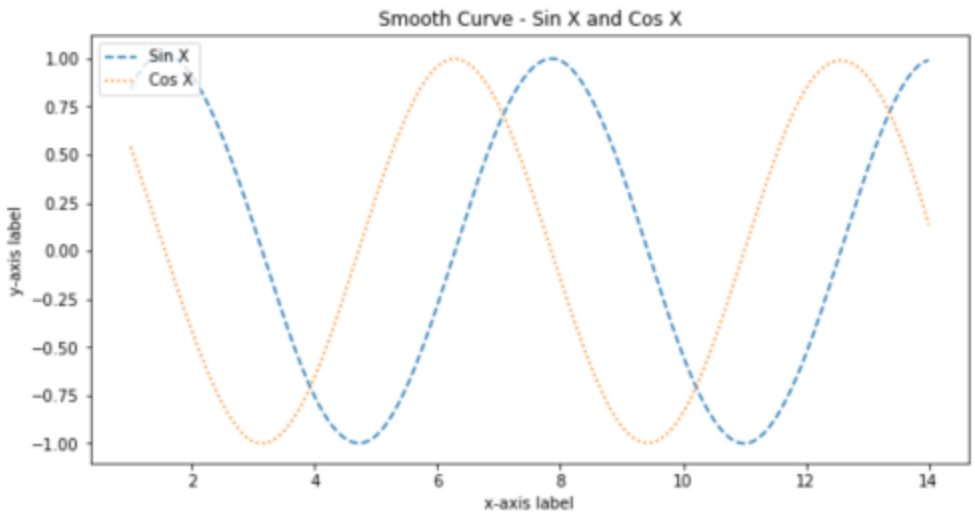
Multiline Plot with different Line styles



matplotlib – Multi Line Plot

```
import matplotlib.pyplot as plt
import numpy as np
from numpy import random


fig = plt.figure(figsize = (10, 5))
x = list(range(1,15))
y_1 = np.sin(x)
y_2 = np.cos(x)

plt.plot(x, y_1, marker='x',linestyle="--")
plt.plot(x, y_2, marker='^',linestyle=":")

plt.xlabel('x-axis label')
plt.ylabel('y-axis label')

plt.title('Sin X and Cos X')
plt.legend(['Sin X', 'Cos X'], loc='upper left')

plt.show()
```

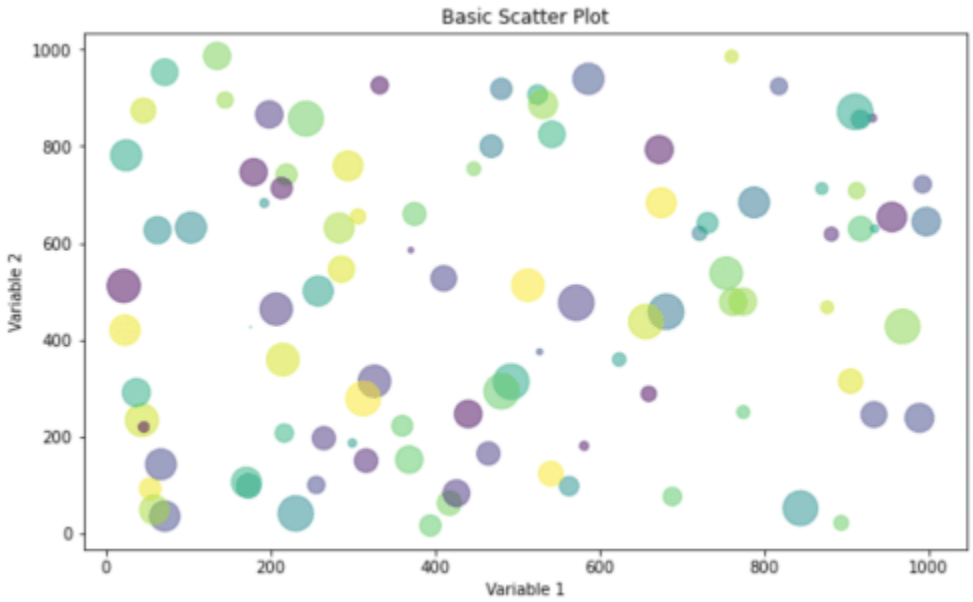
Line Plot – Smoothening the Lines using scipy interpolate make_interp_spline



matplotlib – Line Smoothening

```
import matplotlib.pyplot as plt
import numpy as np
from numpy import random
from scipy.interpolate import make_interp_spline

fig = plt.figure(figsize = (10, 5))
x = list(range(1,15))
y_1 = np.sin(x)
y_2 = np.cos(x)
X_Y1_Spline = make_interp_spline(x, y_1)
X_Y2_Spline = make_interp_spline(x, y_2)

X_ = np.linspace(min(x), max(x), 500)
Y1_ = X_Y1_Spline(X_)
Y2_ = X_Y2_Spline(X_)

plt.plot(X_, Y1_,linestyle="--")
plt.plot(X_, Y2_,linestyle=":")
plt.xlabel('x-axis label')
plt.ylabel('y-axis label')

plt.title('Smooth Curve - Sin X and Cos X')
plt.legend(['Sin X', 'Cos X'], loc='upper left')

plt.show()
```

Basic Scatter Plot

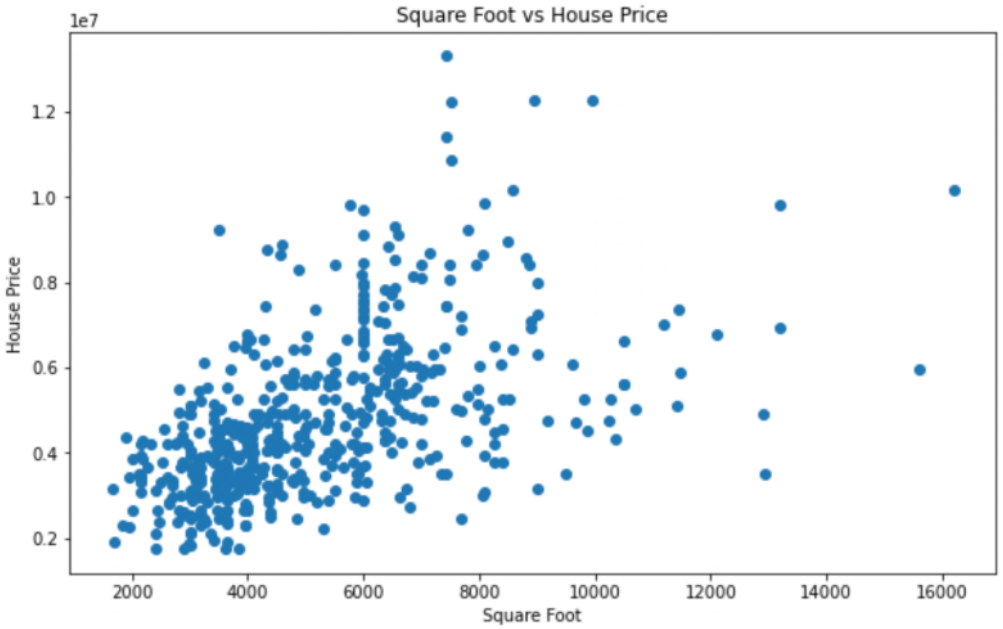


matplotlib – A basic scatter plot

```
import matplotlib.pyplot as plt
import pandas as pd
import numpy as np
import random

fig = plt.figure(figsize = (10, 6))
var1 = np.random.rand(1, 100)
var2 = np.random.rand(1, 100)
var1_arr = var1* 1000
var2_arr = var2* 1000
size = np.random.rand(1, 100)
size_arr = size * 500
color_arr = np.random.rand(100)
plt.scatter(var1_arr,var2_arr,s=size_arr,c=color_arr,alpha=0.5)
plt.xlabel('Variable 1')
plt.ylabel('Variable 2')
plt.title('Basic Scatter Plot')
plt.show()
```

Scatter Plot from a Pandas Dataframe

	price	area	bedrooms	bathrooms	stories	mainroad	guestroom	basement	hotwaterheating	airconditioning	parkir
0	13300000	7420	4	2	3	yes	no	no	no	yes	
1	12250000	8960	4	4	4	yes	no	no	no	yes	
2	12250000	9960	3	2	2	yes	no	yes	no	no	
3	12215000	7500	4	2	2	yes	no	yes	no	yes	
4	11410000	7420	4	1	2	yes	yes	yes	no	yes	



matplotlib – scatter plot from Pandas DataFrame

```
# Data Sourced from https://www.kaggle.com/datasets/yasserh/housing-prices-dataset
# https://storage.googleapis.com/kagglesdsdata/datasets/1859421/3036086/Housing.csv?
X-Goog-Algorithm=GOOG4-RSA-SHA256&X-Goog-Credential=gcp-kaggle-com%40kaggle-
161607.iam.gserviceaccount.com%2F20220902%2Fauto%2Fstorage%2Fgoog4_request&X-Goog-
Date=20220902T220742Z&X-Goog-Expires=259200&X-Goog-SignedHeaders=host&X-Goog-
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aa881eb5ad2a6cc9531cffe4d9936be17689c8985dfe8e35530eabcb862deb3e6f6d20df9d4289c0aacb7
7c5702e365fefbe1ea026d4d090c3929ae6f39b5b52a054fa21db62b41b0e8607ae4e6251f892f442e9dc
d407342268359ba67a4f0ed68622580b7dbf0cb08c87b80f7fe65f9b93a0a332f72ea4292f6ef9fcda293
d75a52dc54c1
import matplotlib.pyplot as plt
import pandas as pd
import numpy as np
import random

df =
pd.read_csv("https://storage.googleapis.com/kagglesdsdata/datasets/1859421/3036086/Ho
using.csv?X-Goog-Algorithm=GOOG4-RSA-SHA256&X-Goog-Credential=gcp-kaggle-
com%40kaggle-
161607.iam.gserviceaccount.com%2F20220902%2Fauto%2Fstorage%2Fgoog4_request&X-Goog-
Date=20220902T220742Z&X-Goog-Expires=259200&X-Goog-SignedHeaders=host&X-Goog-
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9257a315b37516c533c9cd45b2ded7b4516ae4c79525723823352d24363dac113f181b4d10c9ae141c5a3
aa881eb5ad2a6cc9531cffe4d9936be17689c8985dfe8e35530eabcb862deb3e6f6d20df9d4289c0aacb7
7c5702e365fefbe1ea026d4d090c3929ae6f39b5b52a054fa21db62b41b0e8607ae4e6251f892f442e9dc
d407342268359ba67a4f0ed68622580b7dbf0cb08c87b80f7fe65f9b93a0a332f72ea4292f6ef9fcda293
d75a52dc54c1")
display(df.head(5))

fig, ax = plt.subplots(figsize=(10, 6))
ax.scatter(x = df['area'], y = df['price'])
plt.xlabel("Square Foot")
plt.ylabel("House Price")
plt.title('Square Foot vs House Price')
plt.show()
```
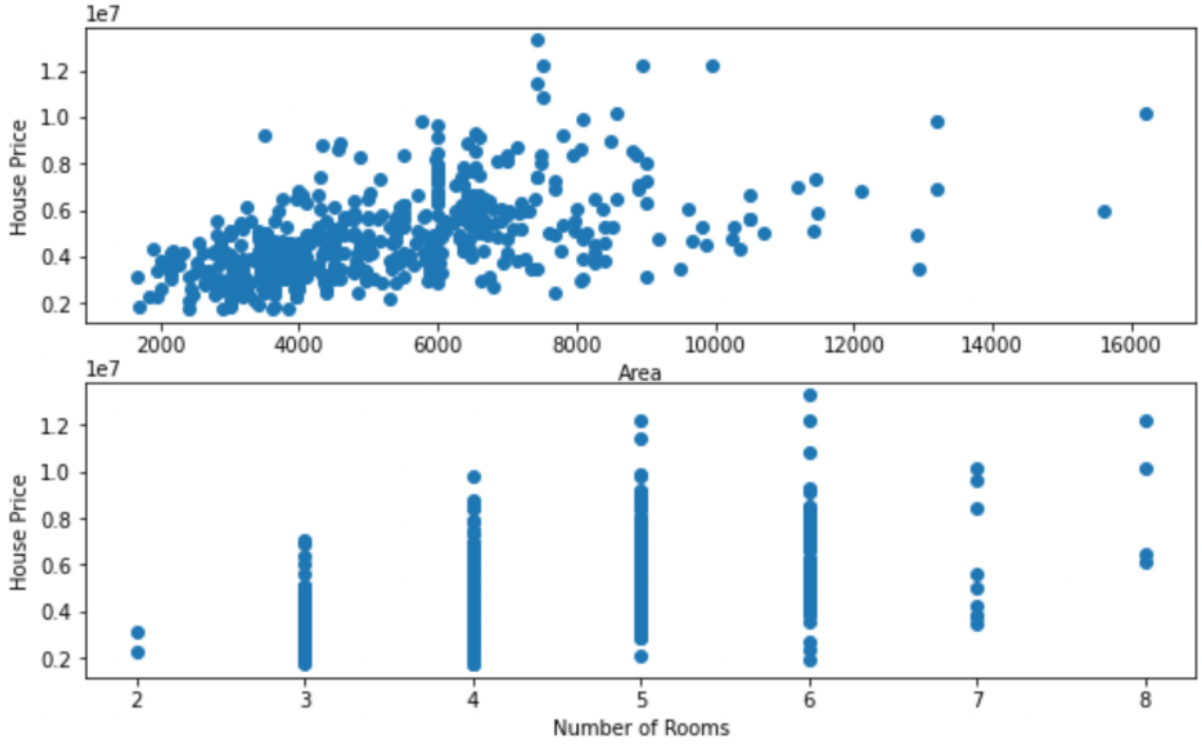

Scatter Plot – Sub Plots



matplotlib – Scatter Plot – Sub Plots

```
# Data Sourced from https://www.kaggle.com/datasets/yasserh/housing-prices-dataset
# https://storage.googleapis.com/kagglesdsdata/datasets/1859421/3036086/Housing.csv?
X-Goog-Algorithm=GOOG4-RSA-SHA256&X-Goog-Credential=gcp-kaggle-com%40kaggle-
161607.iam.gserviceaccount.com%2F20220902%2Fauto%2Fstorage%2Fgoog4_request&X-Goog-
Date=20220902T220742Z&X-Goog-Expires=259200&X-Goog-SignedHeaders=host&X-Goog-
Signature=1ddeca90004ecb5f9fcec93aeaba04a61543c07c1369bdd297a3db5178e9456dec595134635
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aa881eb5ad2a6cc9531cffe4d9936be17689c8985dfe8e35530eabcb862deb3e6f6d20df9d4289c0aacb7
7c5702e365fefbe1ea026d4d090c3929ae6f39b5b52a054fa21db62b41b0e8607ae4e6251f892f442e9dc
d407342268359ba67a4f0ed68622580b7dbf0cb08c87b80f7fe65f9b93a0a332f72ea4292f6ef9fcda293
d75a52dc54c1
import matplotlib.pyplot as plt
import pandas as pd
import numpy as np
import random

df =
pd.read_csv("https://storage.googleapis.com/kagglesdsdata/datasets/1859421/3036086/Ho
using.csv?X-Goog-Algorithm=GOOG4-RSA-SHA256&X-Goog-Credential=gcp-kaggle-
com%40kaggle-
161607.iam.gserviceaccount.com%2F20220902%2Fauto%2Fstorage%2Fgoog4_request&X-Goog-
Date=20220902T220742Z&X-Goog-Expires=259200&X-Goog-SignedHeaders=host&X-Goog-
Signature=1ddeca90004ecb5f9fcec93aeaba04a61543c07c1369bdd297a3db5178e9456dec595134635
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aa881eb5ad2a6cc9531cffe4d9936be17689c8985dfe8e35530eabcb862deb3e6f6d20df9d4289c0aacb7
7c5702e365fefbe1ea026d4d090c3929ae6f39b5b52a054fa21db62b41b0e8607ae4e6251f892f442e9dc
d407342268359ba67a4f0ed68622580b7dbf0cb08c87b80f7fe65f9b93a0a332f72ea4292f6ef9fcda293
d75a52dc54c1")

fig, ax = plt.subplots(2, figsize=(10, 6))
ax[0].scatter(x = df['area'], y = df['price'])
ax[0].set_xlabel("Area")
ax[0].set_ylabel("House Price")

ax[1].scatter(x = df['bedrooms']+ df['bathrooms'], y = df['price'])
ax[1].set_xlabel("Number of Rooms")
ax[1].set_ylabel("House Price")
plt.show()
```
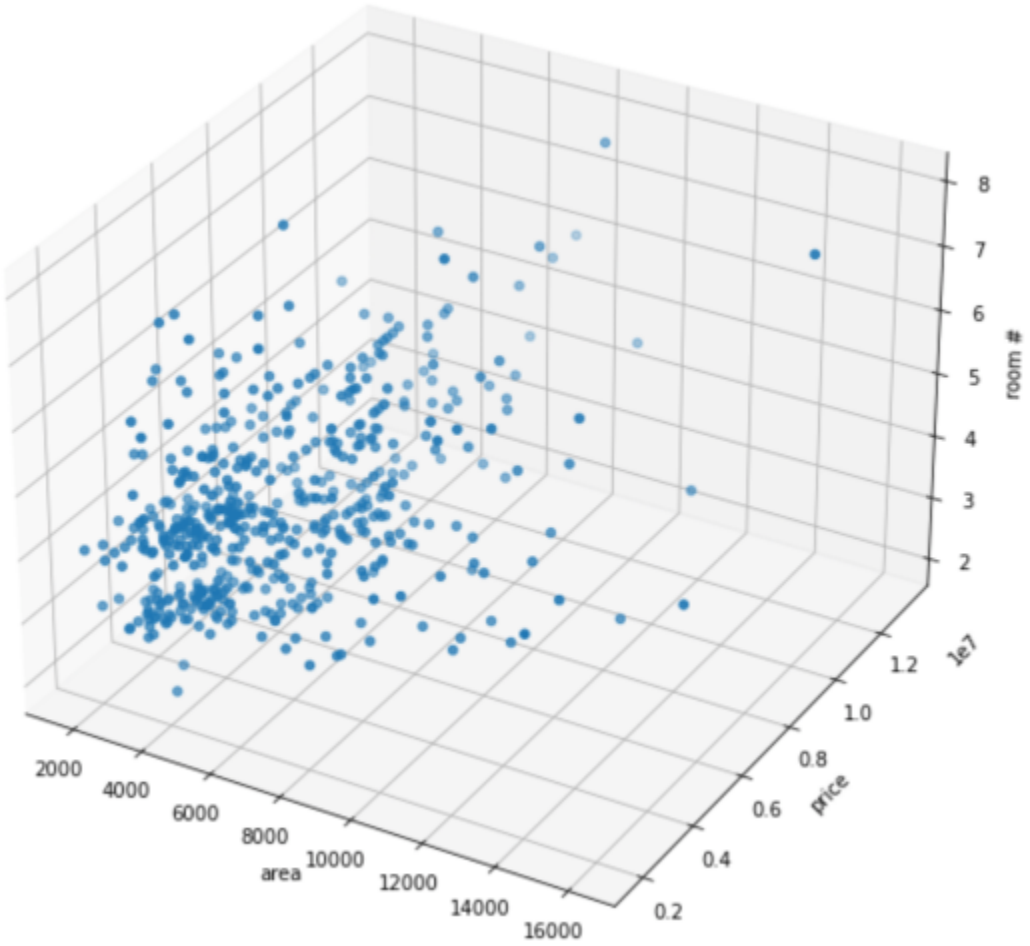

Scatter Plots – 3 Dimensional



matplotlib – 3 dimensional scatter plot

```
# Data Sourced from https://www.kaggle.com/datasets/yasserh/housing-prices-dataset
# https://storage.googleapis.com/kagglesdsdata/datasets/1859421/3036086/Housing.csv?
X-Goog-Algorithm=GOOG4-RSA-SHA256&X-Goog-Credential=gcp-kaggle-com%40kaggle-
161607.iam.gserviceaccount.com%2F20220902%2Fauto%2Fstorage%2Fgoog4_request&X-Goog-
Date=20220902T220742Z&X-Goog-Expires=259200&X-Goog-SignedHeaders=host&X-Goog-
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7c5702e365fefbe1ea026d4d090c3929ae6f39b5b52a054fa21db62b41b0e8607ae4e6251f892f442e9dc
d407342268359ba67a4f0ed68622580b7dbf0cb08c87b80f7fe65f9b93a0a332f72ea4292f6ef9fcda293
d75a52dc54c1
import matplotlib.pyplot as plt
import pandas as pd
import numpy as np
import random

df =
pd.read_csv("https://storage.googleapis.com/kagglesdsdata/datasets/1859421/3036086/Ho
using.csv?X-Goog-Algorithm=GOOG4-RSA-SHA256&X-Goog-Credential=gcp-kaggle-
com%40kaggle-
161607.iam.gserviceaccount.com%2F20220902%2Fauto%2Fstorage%2Fgoog4_request&X-Goog-
Date=20220902T220742Z&X-Goog-Expires=259200&X-Goog-SignedHeaders=host&X-Goog-
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7c5702e365fefbe1ea026d4d090c3929ae6f39b5b52a054fa21db62b41b0e8607ae4e6251f892f442e9dc
d407342268359ba67a4f0ed68622580b7dbf0cb08c87b80f7fe65f9b93a0a332f72ea4292f6ef9fcda293
d75a52dc54c1")

fig = plt.figure(figsize = (10, 10))
ax = fig.add_subplot(111, projection = '3d')
x = df['area']
y = df['price']
z = df['bedrooms']+ df['bathrooms']
ax.scatter(x, y, z)
ax.set_xlabel("area")
ax.set_ylabel("price")
ax.set_zlabel("room #")
plt.show()
```