

using_matplotlib

March 2, 2022

0.0.1 This tutorial shows how to use the matplotlib (a Python package for visualization) to make a few basic plots

0.0.2 Installing matplotlib

Type the following command from the command line and hit enter

```
[89]: pip install matplotlib
```

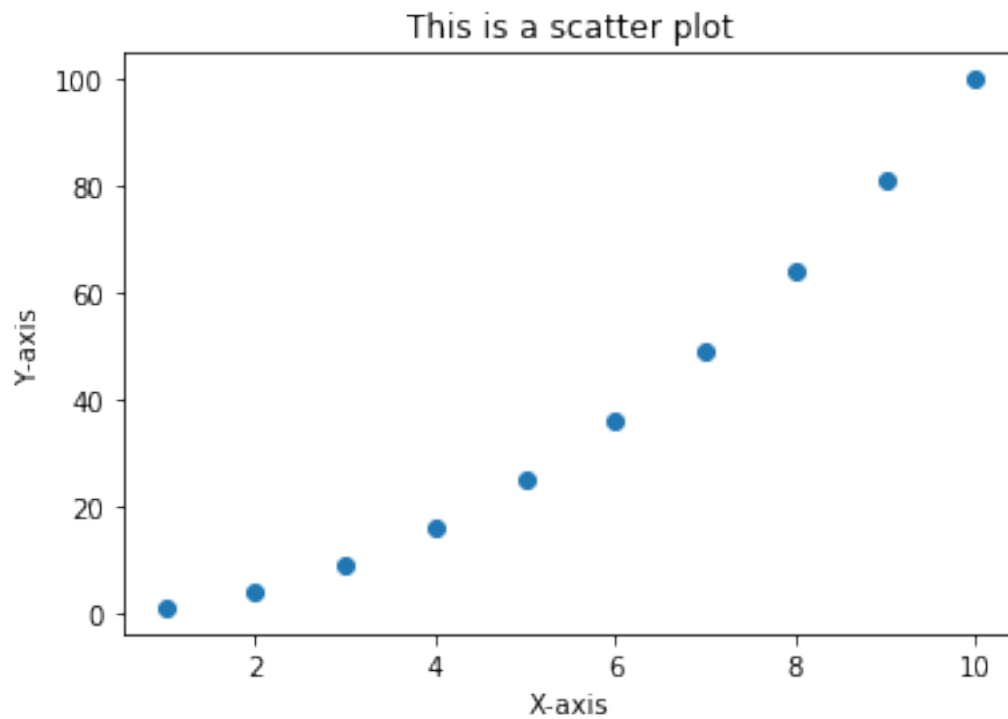
If pip is not installed on your computer, follow this link <https://pip.pypa.io/en/stable/installation/>

Once matplotlib is installed, you will need to import it to make plots. Put the import command on top of your script

```
[81]: # The name doesn't have to be plt. It is just convention  
import matplotlib.pyplot as plt
```

0.0.3 Scatter plot

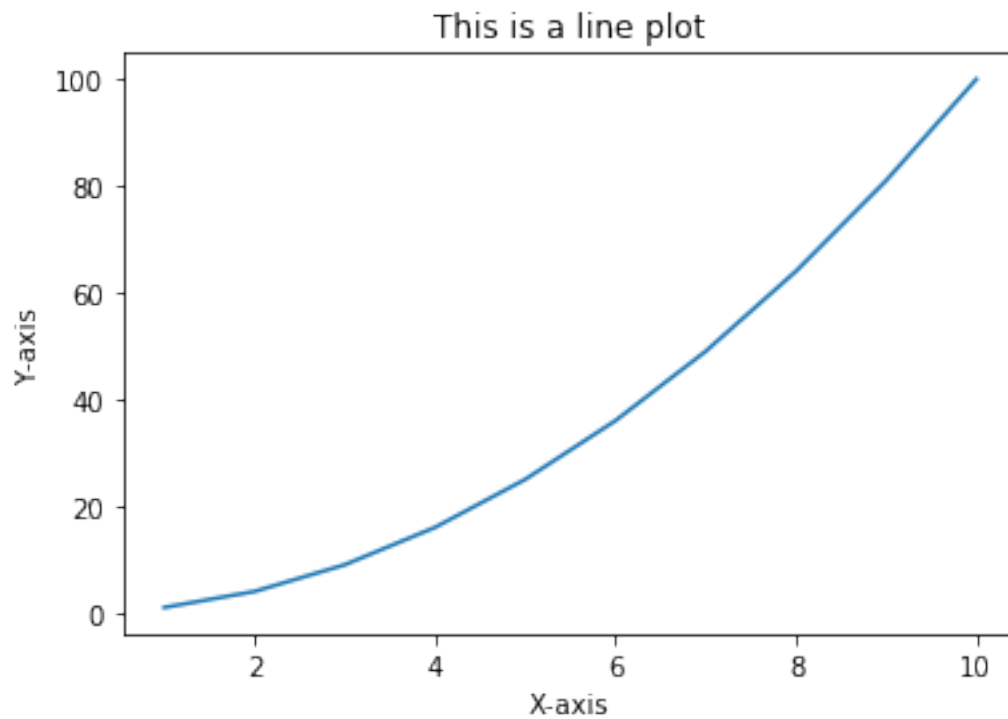
```
[83]: # Define two lists that will be used for the plots. List sizes have to be equal  
  
x = [1,2,3,4,5,6,7,8,9,10]  
y = [1,4,9,16,25,36,49,64,81,100]  
  
## To make a scatter plot  
  
plt.scatter(x,y)  
plt.xlabel('X-axis')  
plt.ylabel('Y-axis')  
plt.title("This is a scatter plot")  
plt.show()
```



0.0.4 Simple line plot

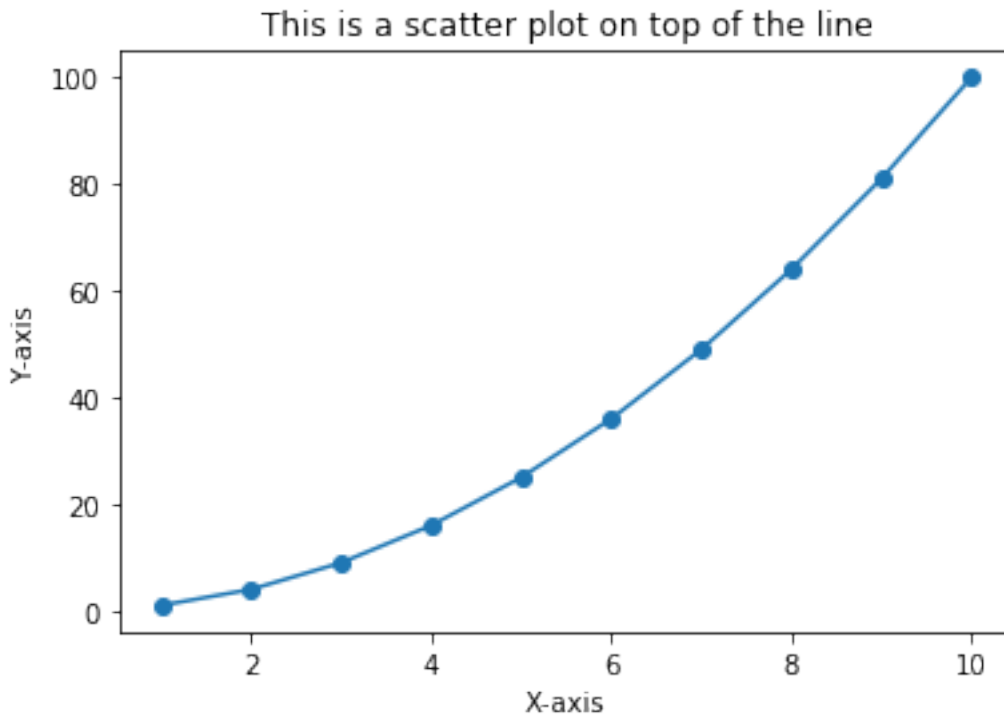
```
[84]: plt.plot(x,y)

plt.xlabel('X-axis')
plt.ylabel('Y-axis')
plt.title("This is a line plot")
plt.show()
```



0.0.5 Putting both plots together

```
[85]: ## To make both on the same plot, just put them together  
plt.scatter(x,y)  
plt.plot(x,y)  
  
plt.xlabel('X-axis')  
plt.ylabel('Y-axis')  
plt.title("This is a scatter plot on top of the line")  
plt.show()
```



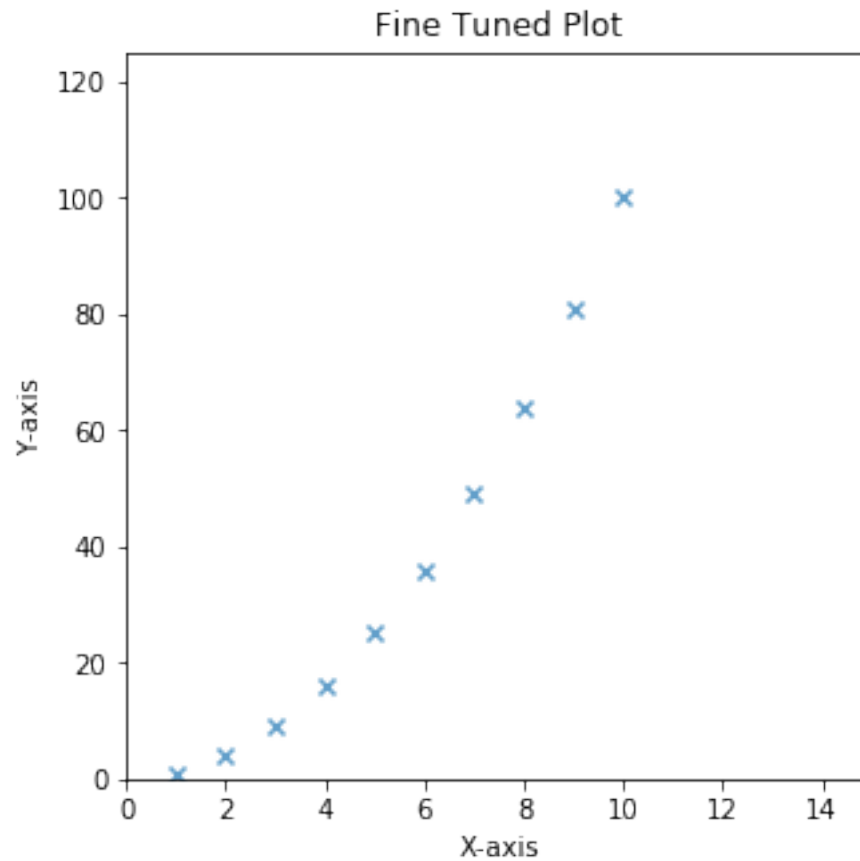
0.0.6 Extra.... Some more parameters

```
[86]: plt.figure(figsize=(5,5)) # To change figure size

# linewidth for width of the line, alpha to modify contrast, marker for marker
# style
plot = plt.scatter(x,y,linewidths=2,alpha=0.7,marker="x")

plt.xlabel('X-axis')
plt.ylabel('Y-axis')
plt.title('Fine Tuned Plot')

plt.xlim(0,15) # Set limits on the X-axis
plt.ylim(0,125) # Set limit on the Y-axis
plt.savefig("demo_plot.png",dpi=800) # To save the plot on computer # increase
# dpi for better resolution
```



0.0.7 To plot multiple lines using for loop on the same plot

```
[88]: x = [1,2,3,4,5,6,7,8,9,10]
y1 = [1,2,3,4,5,6,7,8,9,10]
y2 = [1,4,9,16,25,36,49,64,81,100]
y3 = [y1,y2]

labels = ['linear', 'non linear']

for i in range(2):
    plt.plot(x,y3[i],label=labels[i],marker='o')

plt.legend() # To show the figure legend
plt.legend(bbox_to_anchor=(1, 0.95)) # To change the position of the legend
plt.xlabel('X-axis')
plt.ylabel('Y-axis')
plt.title('Multiple plots')
plt.show()
```

