

Torrodjae Somerville

CTEC 298-101: Symbolic Computation Using Big Data

Dr. Bemley

November 6, 2025

Matplotlib Tutorial Completion

localhost:8798/notebooks/Matplotlib%20Tutorial%20Completion.ipynb

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```
[1]: #Graph 1
from matplotlib import pyplot as plt

plt.plot([1,2,3],[4,5,1])

plt.show()
```

```
[3]: #Graph 2
from matplotlib import pyplot as plt

X = [5,8,10]
```

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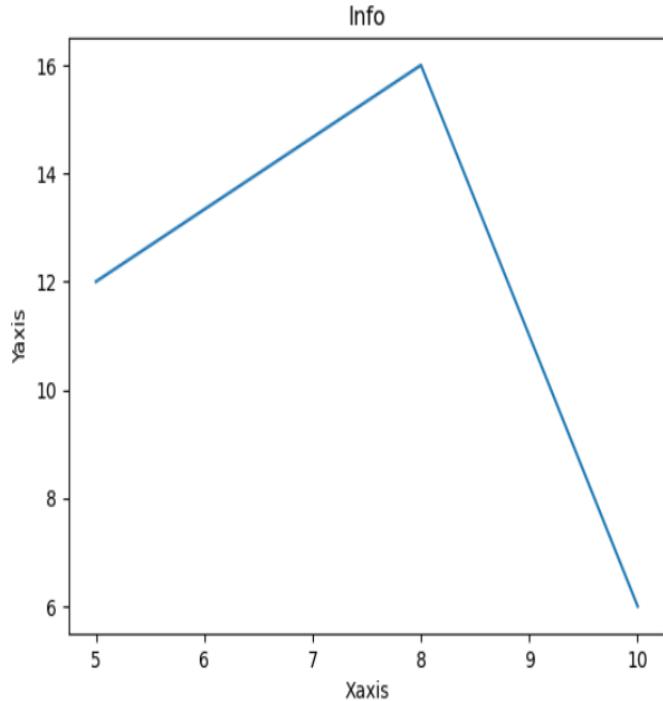
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```
[3]: #Graph 2
from matplotlib import pyplot as plt
X = [5,8,10]
Y = [12,16,6]
plt.plot(X,Y)

plt.title("Info")
plt.ylabel("Yaxis")
plt.xlabel("Xaxis")

plt.show()
```



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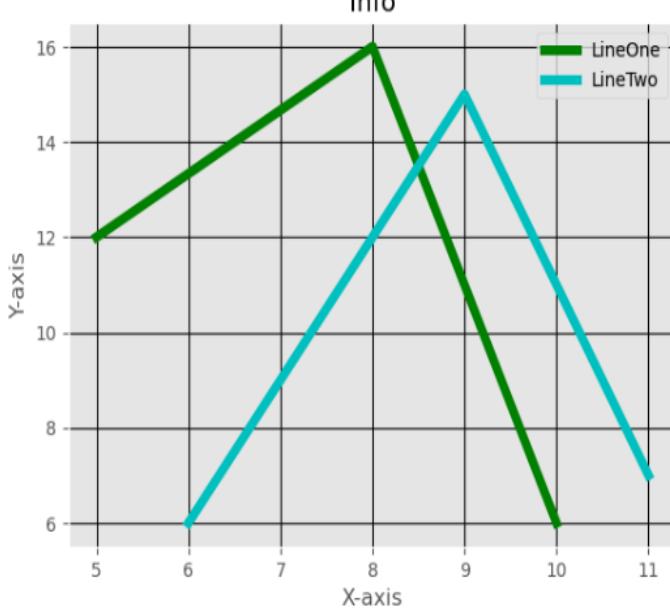
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```
[11]: #Graph 3
from matplotlib import pyplot as plt
from matplotlib import style
style.use("ggplot")

X = [5,8,10]
Y = [12,16,6]
X2 = [6,9,11]
Y2 = [6,15,7]

plt.plot(X,Y,'g',label='LineOne',linewidth=5)
plt.plot(X2,Y2,'c',label="LineTwo",linewidth=5)
plt.title("Info")
plt.ylabel("Y-axis")
plt.xlabel("X-axis")
|
plt.legend()
plt.grid(True,color='k')
plt.show()
```

Info



Y-axis

X-axis

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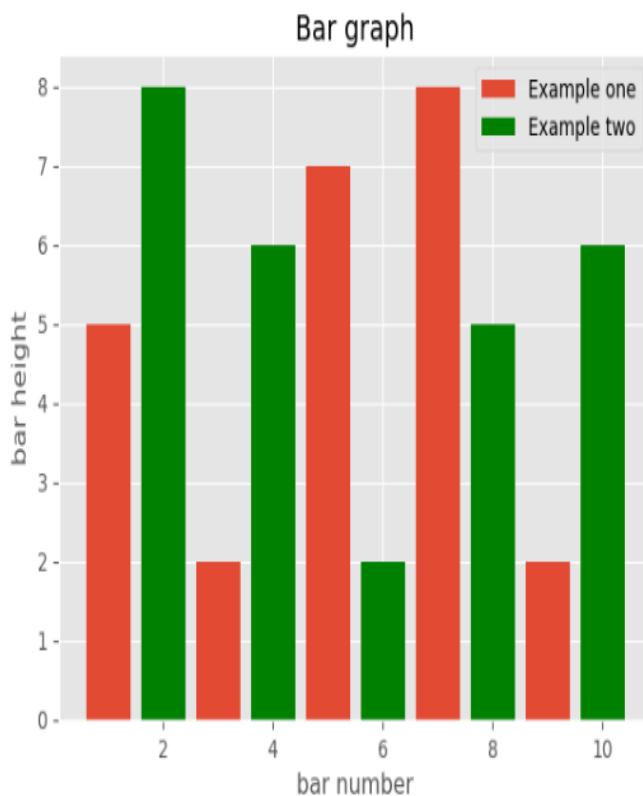
```
*[13]: #Graph 4
import matplotlib.pyplot as plt

plt.bar([1,3,5,7,9],[5,2,7,8,2], label="Example one")

plt.bar([2,4,6,8,10],[8,6,2,5,6], label="Example two", color='g')
plt.legend()
plt.xlabel('bar number')
plt.ylabel('bar height')

plt.title('Bar graph')

plt.show()
```



• [15]: #Graph 5

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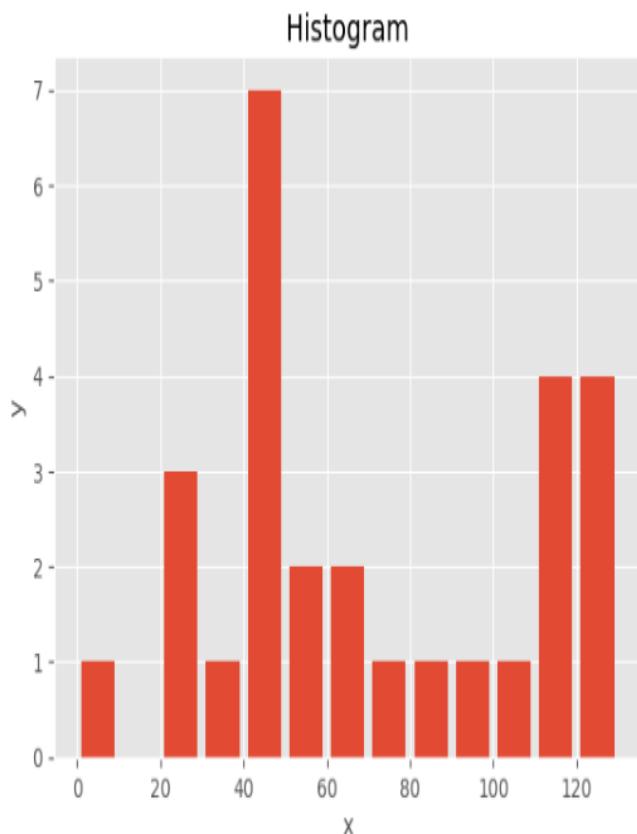
bar number

```
*[15]: #Graph 5
import matplotlib.pyplot as plt
population_ages = [22,55,62,45,21,22,34,42,42,4,99,102,110,120,121,122,130,111,115,112,80,75,65,54,44,43,42,48]
bins = [0,10,20,30,40,50,60,70,80,90,100,110,120,130]

plt.hist(population_ages, bins, histtype='bar', rwidth=0.8)

plt.xlabel('x')
plt.ylabel('y')

plt.title('Histogram')
plt.show()
```



• [16]: #Graph 6

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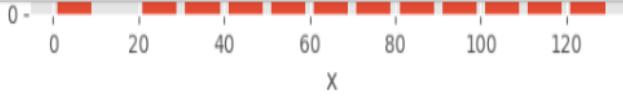


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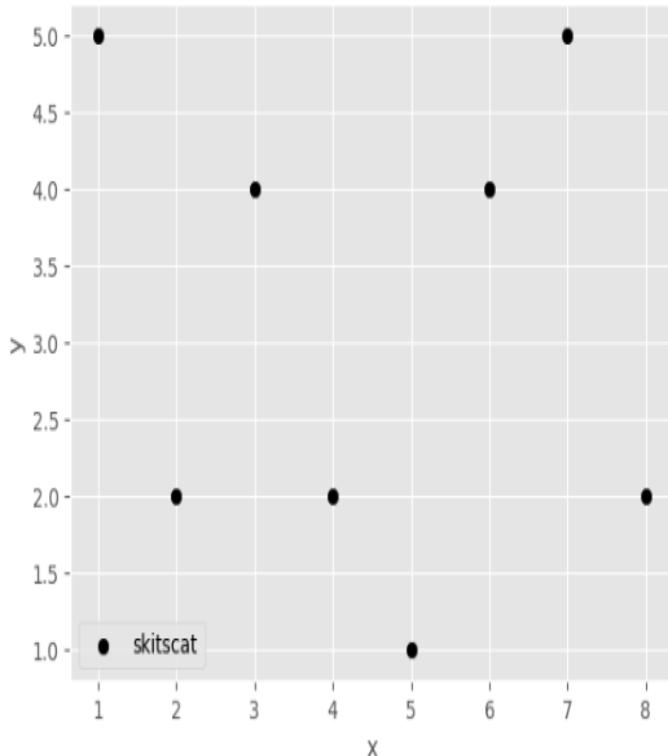


```
*[16]: #Graph 6
import matplotlib.pyplot as plt

x = [1,2,3,4,5,6,7,8]
y = [5,2,4,2,1,4,5,2]

plt.scatter(x,y, label='skitscat', color='k')

plt.xlabel('x')
plt.ylabel('y')
plt.legend()
plt.show()
```



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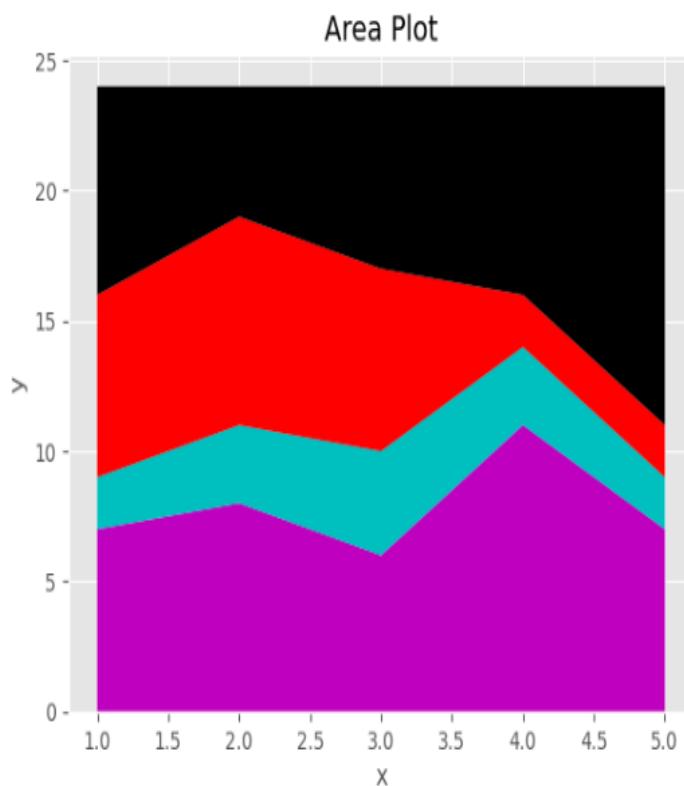
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```
*[18]: Graph 7
import matplotlib.pyplot as plt
days = [1,2,3,4,5]
sleeping = [7,8,6,11,7]
eating = [2,3,4,3,2]
working = [7,8,7,2,2]
playing = [8,5,7,8,13]

plt.plot([],color='m', label='Sleeping', linewidth=5)
plt.plot([],color='c', label='Eating', linewidth=5)
plt.plot([],color='r', label='Working', linewidth=5)
plt.plot([],color='k', label='Playing', linewidth=5)

plt.stackplot(days, sleeping,eating,working,playing, colors=['m','c','r','k'])

plt.xlabel('x')
plt.ylabel('y')
plt.title('Area Plot')
plt.show()
```



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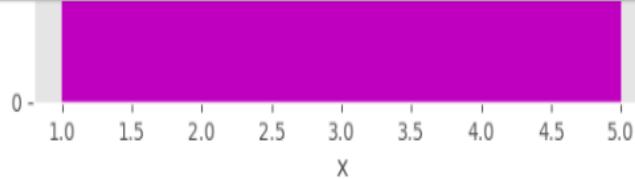


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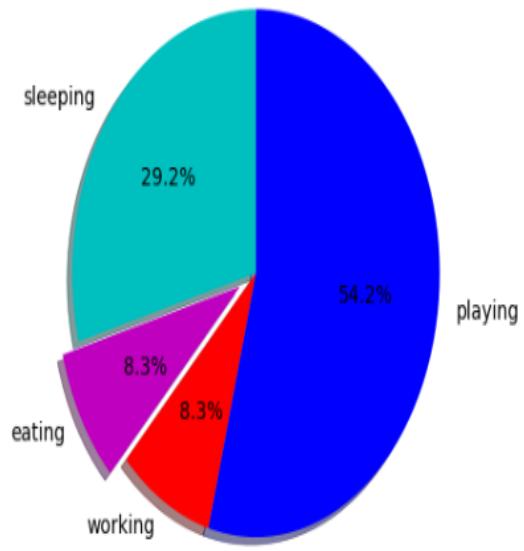


```
[20]: Graph 8
import matplotlib.pyplot as plt

slices = [7,2,2,13]
activities = ['sleeping','eating','working','playing']
cols = ['c','m','r','b']

plt.pie(slices, labels=activities, colors=cols, startangle=90, shadow=True, explode=(0,0.1,0,0), autopct='%1.1f%%')
plt.title('Pie Chart')
plt.show()
```

Pie Chart



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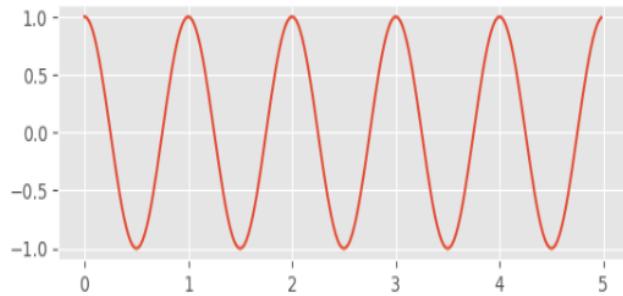
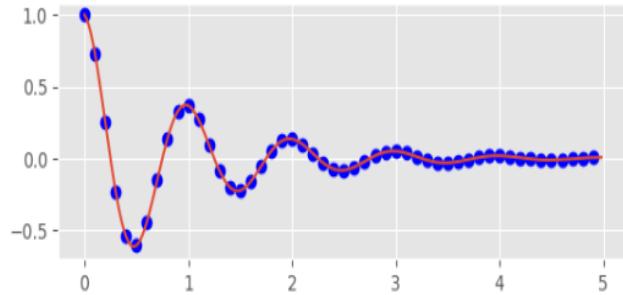
```
[22]: #Graphs 9 & 10
import numpy as np
import matplotlib.pyplot as plt

def f(t):
    return np.exp(-t) * np.cos(2*np.pi*t)

t1 = np.arange(0.0, 5.0, 0.1)
t2 = np.arange(0.0, 5.0, 0.02)

plt.subplot(211)
plt.plot(t1, f(t1), 'bo', t2, f(t2))

plt.subplot(212)
plt.plot(t2, np.cos(2*np.pi*t2))
plt.show()
```



[]: