Matplotlib基础绘图函数示例

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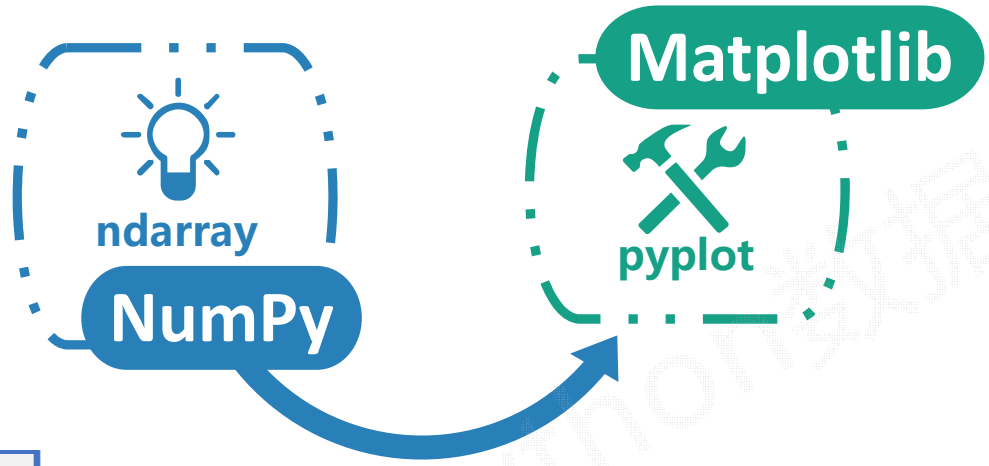
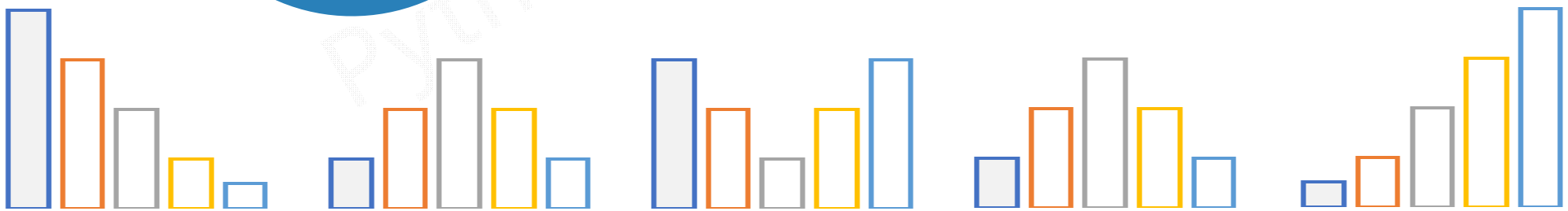
python
弹指之间 · 享受创新

Python数据分析与展示

掌握表示、清洗、统计和展示数据的能力





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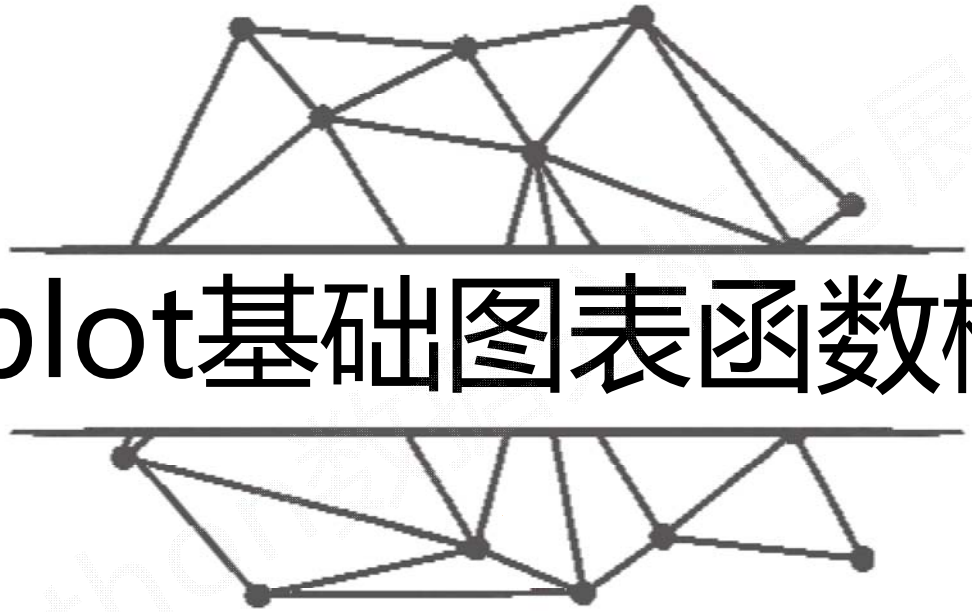


pyplot基础图表函数概述

pyplot的基础图标函数

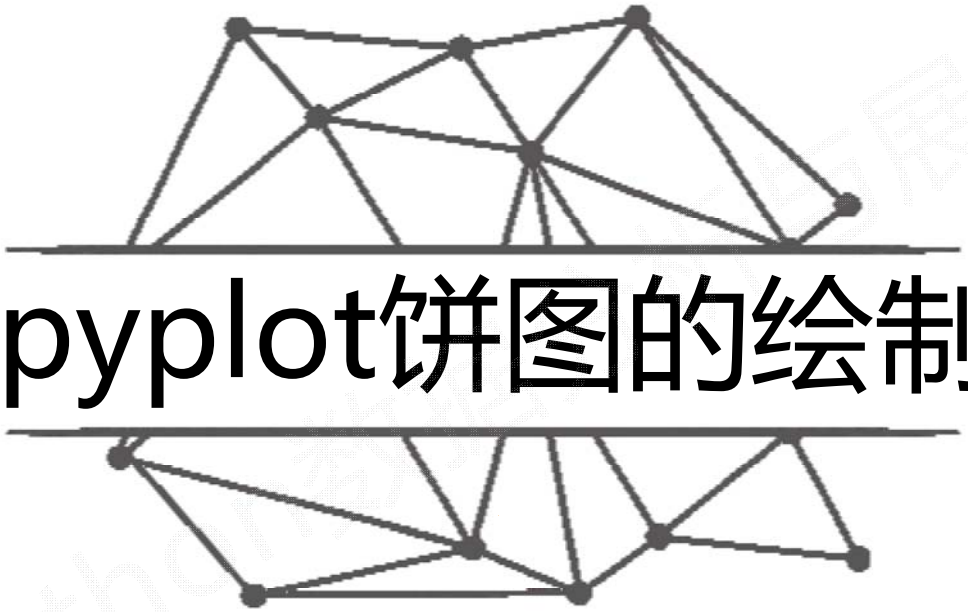
函数	说明
plt.plot(x,y,fmt,…)	绘制一个坐标图
plt.boxplot(data,notch,position)	绘制一个箱形图
plt.bar(left,height,width,bottom)	绘制一个条形图
plt.barh(width,bottom,left,height)	绘制一个横向条形图
plt.polar(theta, r)	绘制极坐标图
plt.pie(data, explode)	绘制饼图

pyplot的基础图标函数

函数	说明
plt.psd(x,NFFT=256,pad_to,Fs)	绘制功率谱密度图
plt.specgram(x,NFFT=256,pad_to,F)	绘制谱图
plt.cohere(x,y,NFFT=256,Fs)	绘制X-Y的相关性函数
plt.scatter(x,y)	绘制散点图，其中，x和y长度相同
plt.step(x,y,where)	绘制步阶图
plt.hist(x,bins,normed)	绘制直方图

pyplot的基础图标函数

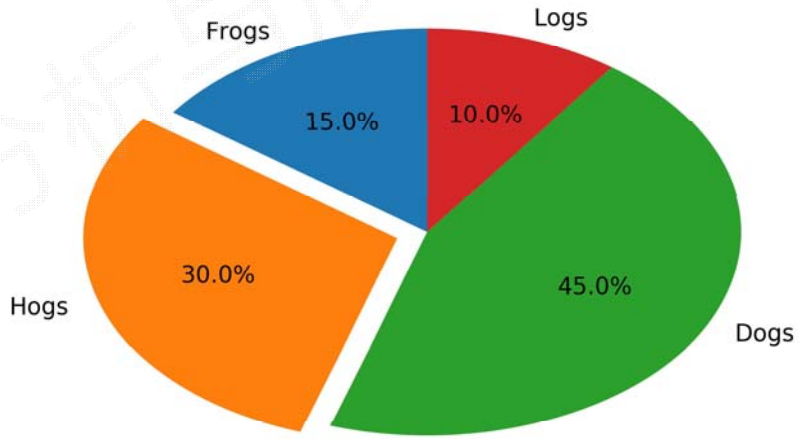
函数	说明
plt.contour(X,Y,Z,N)	绘制等值图
plt.vlines()	绘制垂直图
plt.stem(x,y,linefmt,markerfmt)	绘制柴火图
plt.plot_date()	绘制数据日期



pyplot饼图的绘制

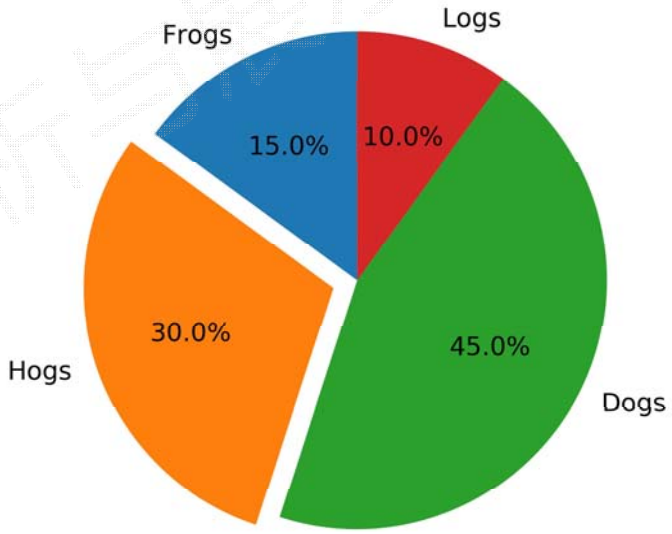
plt.pie()

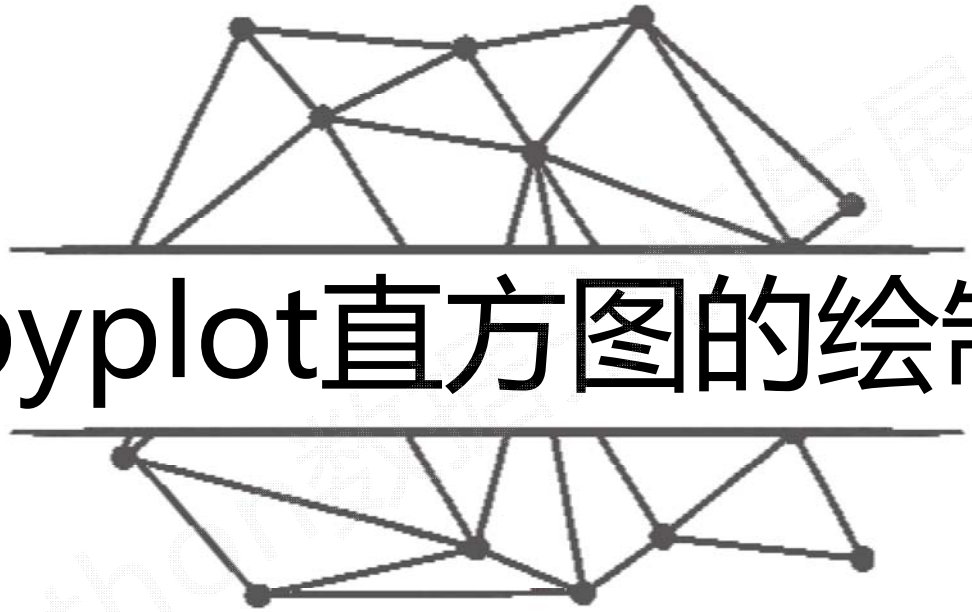
```
import matplotlib.pyplot as plt

labels  = 'Frogs', 'Hogs', 'Dogs', 'Logs'
sizes   = [15, 30, 45, 10]
explode = (0, 0.1, 0, 0)

plt.pie(sizes, explode=explode, labels=labels, autopct='%1.1f%%',
        shadow=False, startangle=90)

plt.show()
```



plt.pie()

```
import matplotlib.pyplot as plt

labels  = 'Frogs', 'Hogs', 'Dogs', 'Logs'
sizes   = [15, 30, 45, 10]
explode = (0, 0.1, 0, 0)

plt.pie(sizes, explode=explode, labels=labels, autopct='%1.1f%%',
        shadow=False, startangle=90)

plt.axis('equal')
plt.show()
```

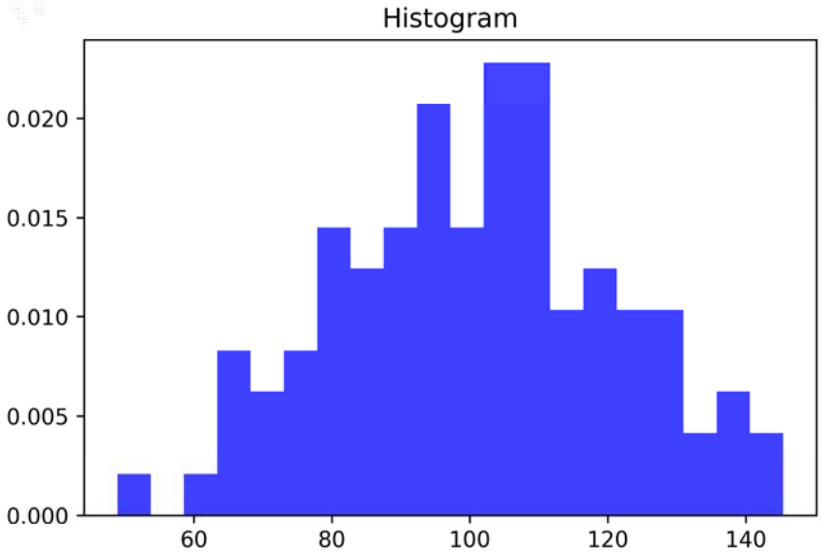




pyplot直方图的绘制

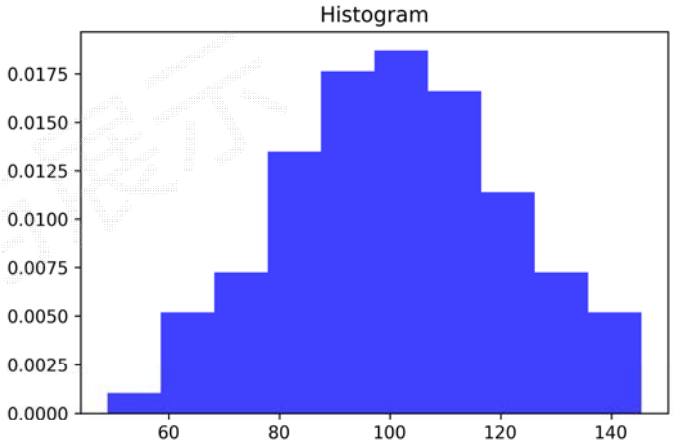
plt.hist()

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

np.random.seed(0)
mu, sigma = 100, 20    # 均值和标准差
a = np.random.normal(mu, sigma, size=100)

plt.hist(a, 20, normed=1, histtype='stepfilled',  facecolor='b', alpha=0.75)
plt.title('Histogram')

plt.show()
```



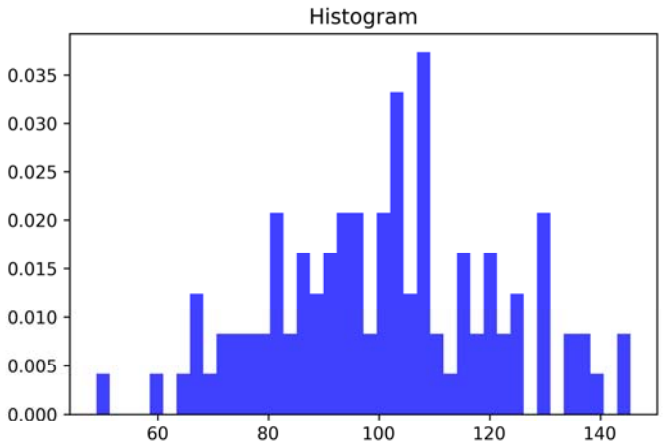
plt.hist()

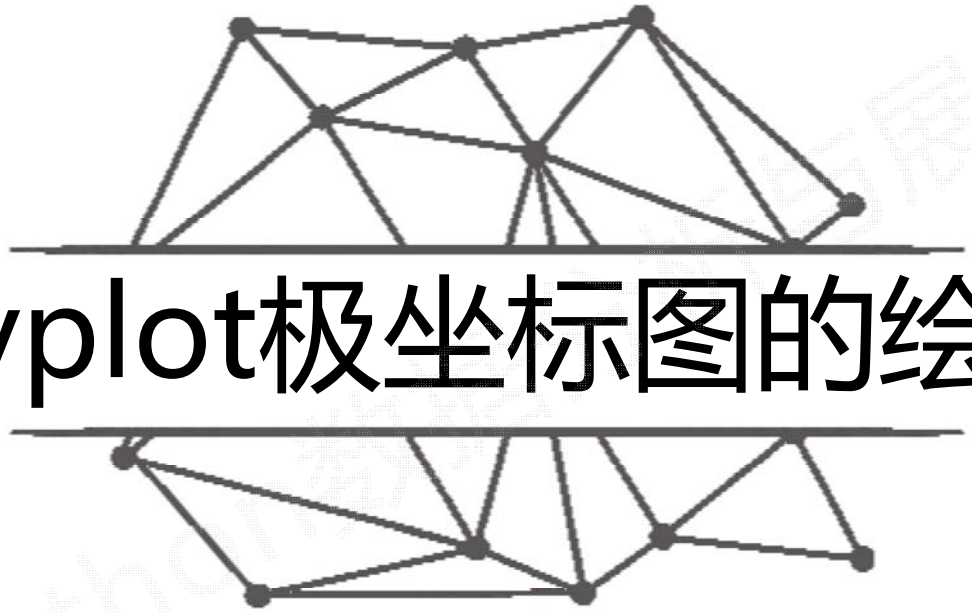
```python
import numpy as np
import matplotlib.pyplot as plt

np.random.seed(0)
mu, sigma = 100, 20    # 均值和标准差
a = np.random.normal(mu, sigma, size=100)

plt.hist(a, 10, normed=1, histtype='stepfilled',  facecolor='b', alpha=0.75)
plt.title('Histogram')

plt.show()
```



bin: 直方图的个数

```python
import numpy as np
import matplotlib.pyplot as plt

np.random.seed(0)
mu, sigma = 100, 20    # 均值和标准差
a = np.random.normal(mu, sigma, size=100)

plt.hist(a, 40, normed=1, histtype='stepfilled',  facecolor='b', alpha=0.75)
plt.title('Histogram')

plt.show()
```





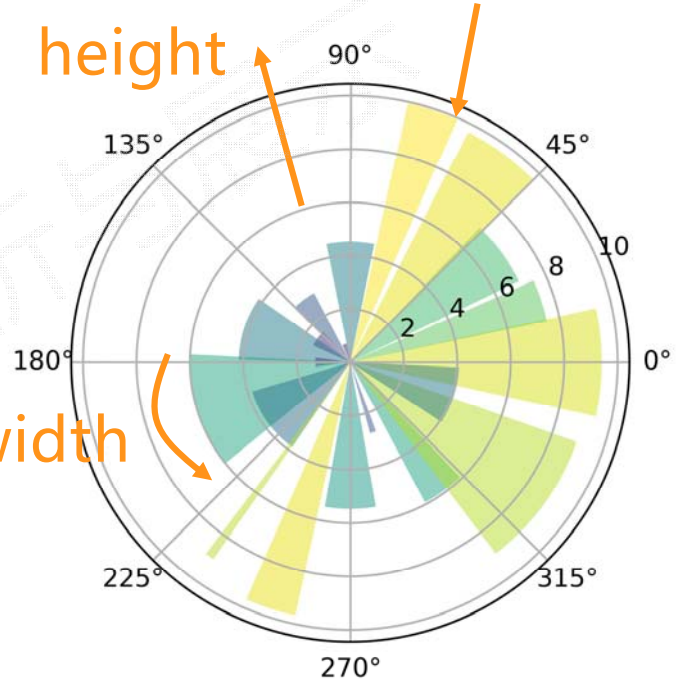
pyplot极坐标图的绘制

面向对象绘制极坐标

```python
import numpy as np
import matplotlib.pyplot as plt

N = 20
theta = np.linspace(0.0, 2 * np.pi, N, endpoint=False)
radii = 10 * np.random.rand(N)
width = np.pi / 4 * np.random.rand(N)

ax = plt.subplot(111, projection='polar')
bars = ax.bar(theta, radii, width=width, bottom=0.0)

for r, bar in zip(radii, bars):
    bar.set_facecolor(plt.cm.viridis(r / 10.))
    bar.set_alpha(0.5)

plt.show()
```

left

height

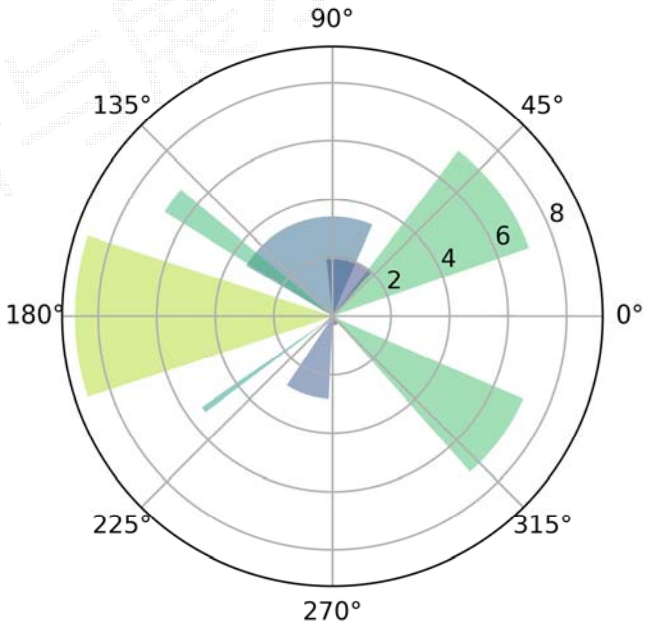


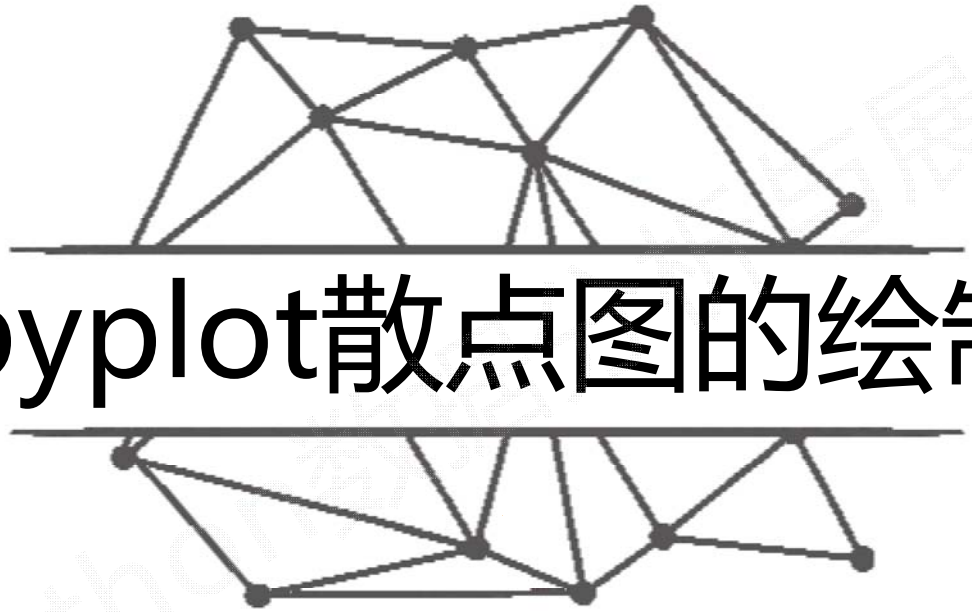
width

left, height, width

面向对象绘制方式

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

N = 10
theta = np.linspace(0.0, 2 * np.pi, N, endpoint=False)
radii = 10 * np.random.rand(N)
width = np.pi / 2 * np.random.rand(N)

ax = plt.subplot(111, projection='polar')
bars = ax.bar(theta, radii, width=width, bottom=0.0)

for r, bar in zip(radii, bars):
    bar.set_facecolor(plt.cm.viridis(r / 10.))
    bar.set_alpha(0.5)

plt.show()
```

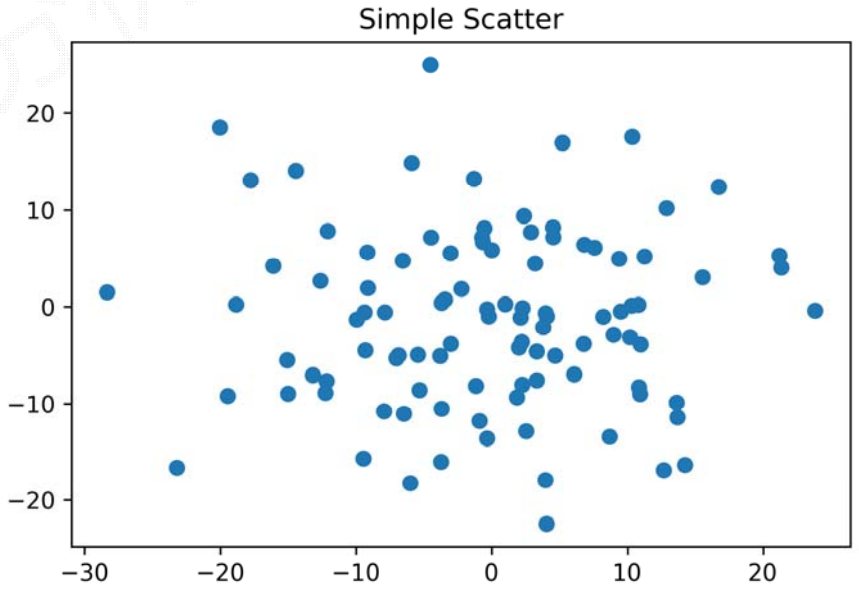


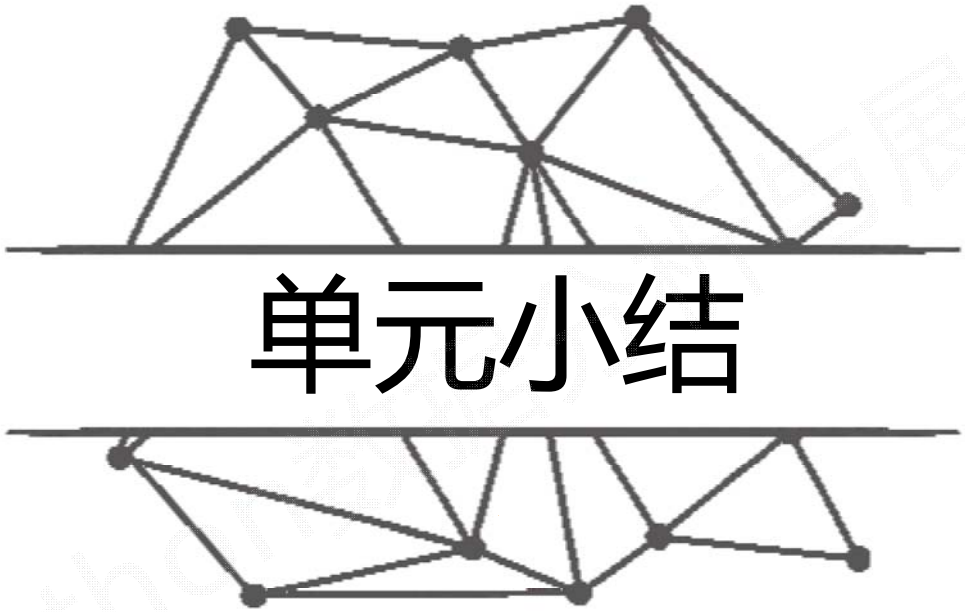


pyplot散点图的绘制

面向对象绘制散点图

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

fig, ax = plt.subplots()
ax.plot(10*np.random.randn(100), 10*np.random.randn(100), 'o')
ax.set_title('Simple Scatter')

plt.show()
```





单元小结

Matplotlib基础绘图函数示例