

Matplotlib基础绘图函数示例

DV05

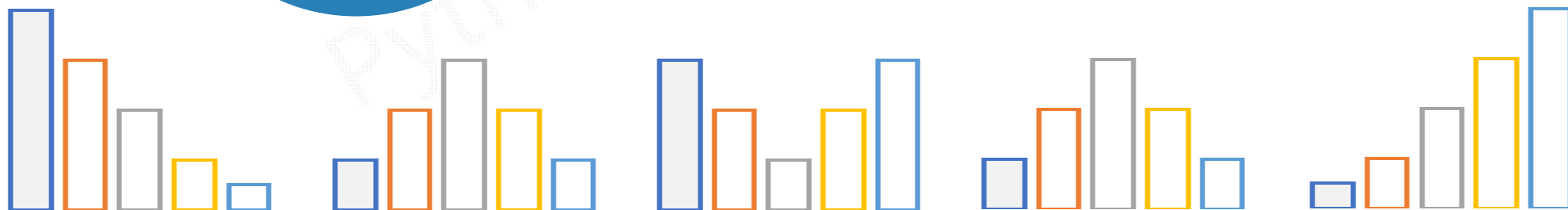
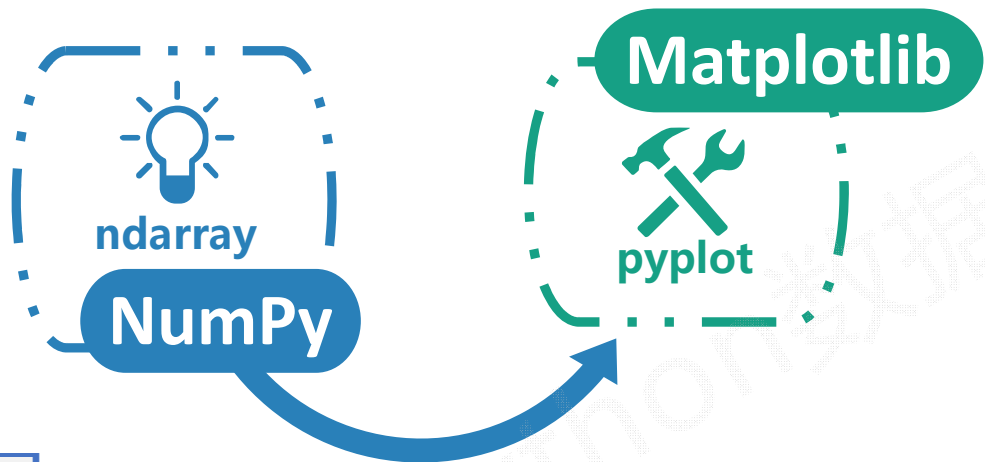


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Python数据分析与展示

掌握表示、清洗、统计和展示数据的能力





pyplot基础图表函数概述

pyplot的基础图标函数

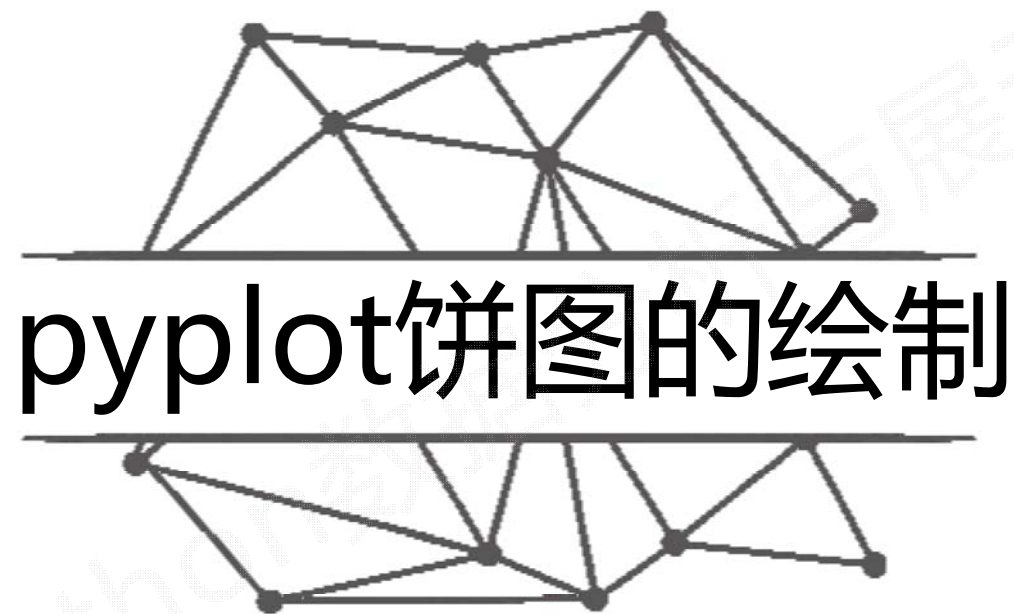
函数	说明
<code>plt.plot(x,y,fmt,...)</code>	绘制一个坐标图
<code>plt.boxplot(data,notch,position)</code>	绘制一个箱形图
<code>plt.bar(left,height,width,bottom)</code>	绘制一个条形图
<code>plt.barh(width,bottom,left,height)</code>	绘制一个横向条形图
<code>plt.polar(theta, r)</code>	绘制极坐标图
<code>plt.pie(data, explode)</code>	绘制饼图

pyplot的基础图标函数

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

pyplot的基础图标函数

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



pyplot饼图的绘制

Python 数据可视化展示

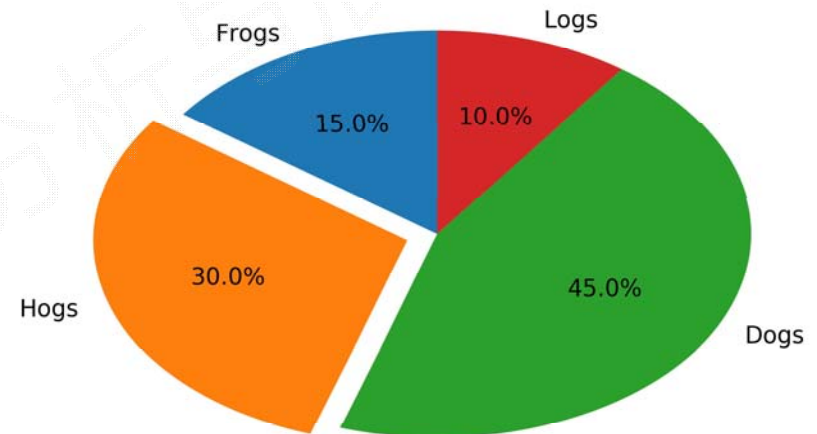
plt.pie()

```
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()
```



百分比显示方式

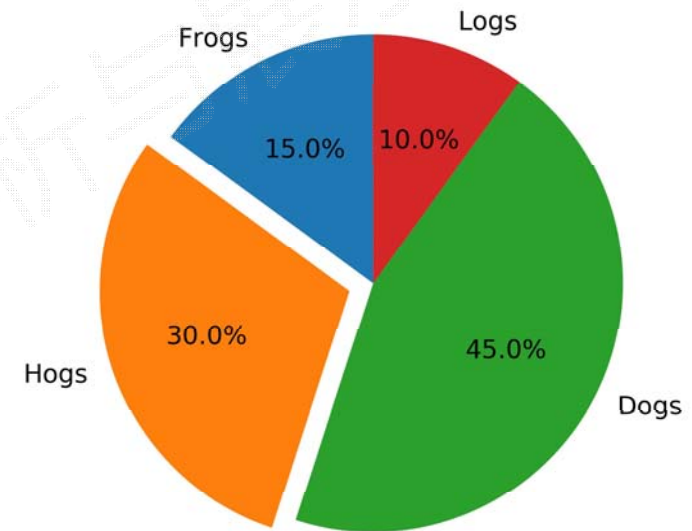
plt.pie()

```
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

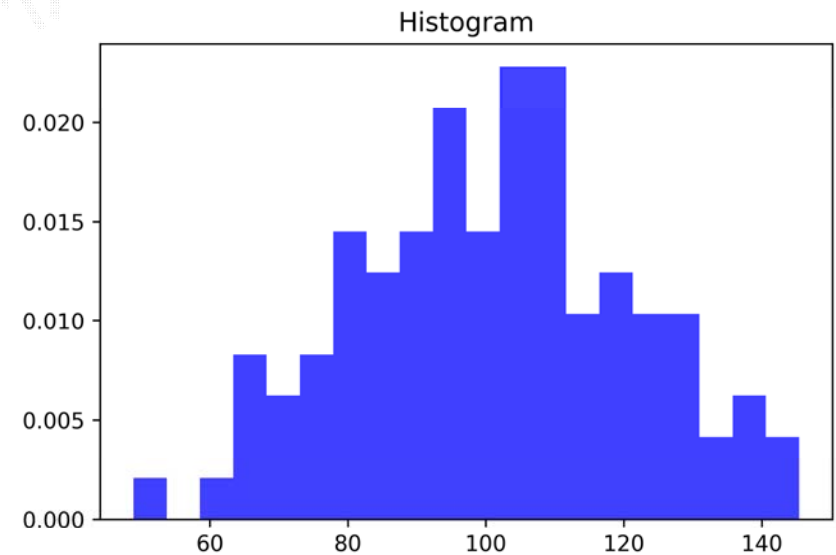
plt.hist()

```
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()
```



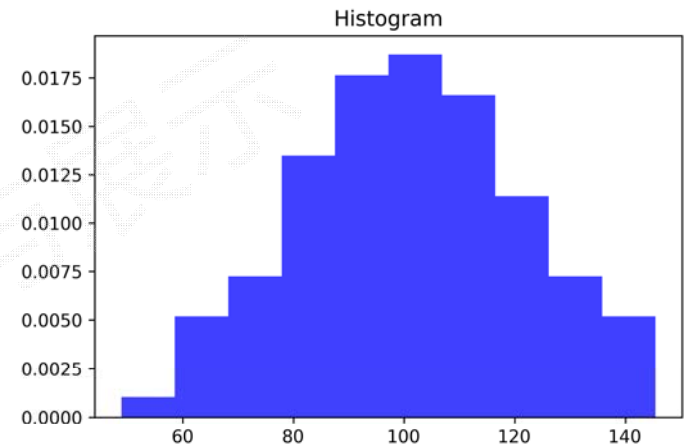
plt.hist()

```
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()
```



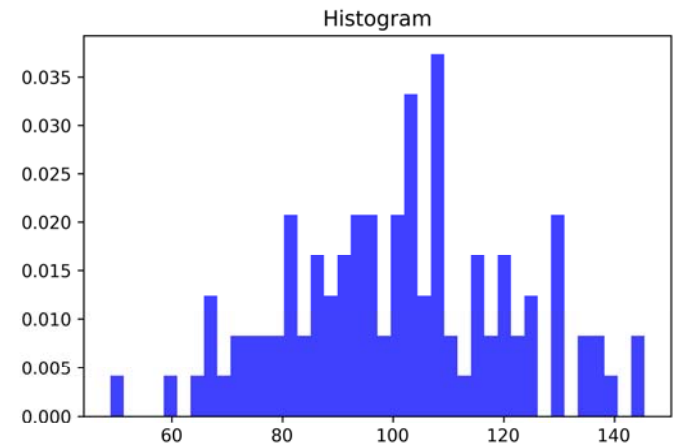
```
import numpy as np
import matplotlib.pyplot as plt

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()
```

bin: 直方图的个数



normed=1, 纵轴为出现的频率
normed=0, 纵轴为出现的次数



pyplot极坐标图的绘制

面向对象绘制极坐标

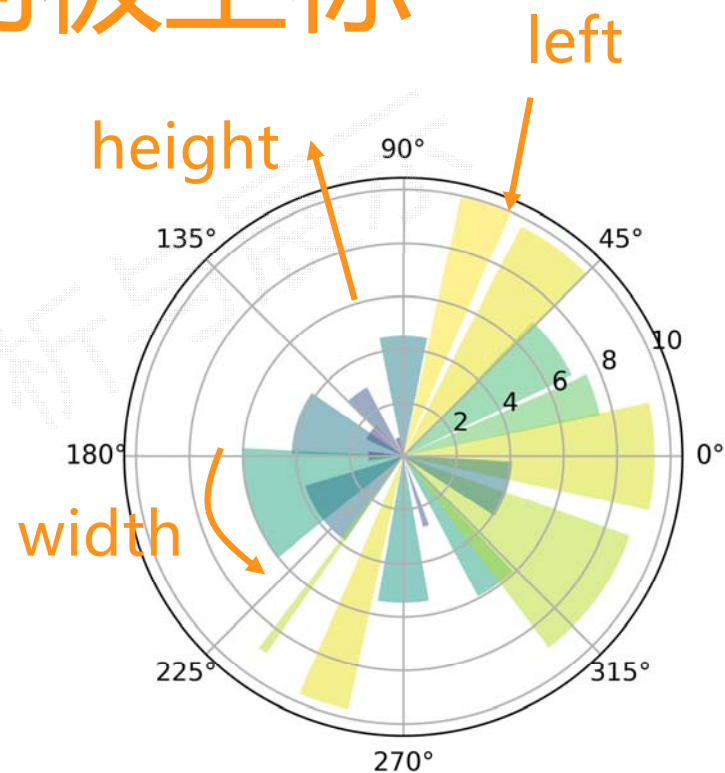
```
import numpy as np
import matplotlib.pyplot as plt

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

面向对象绘制方式

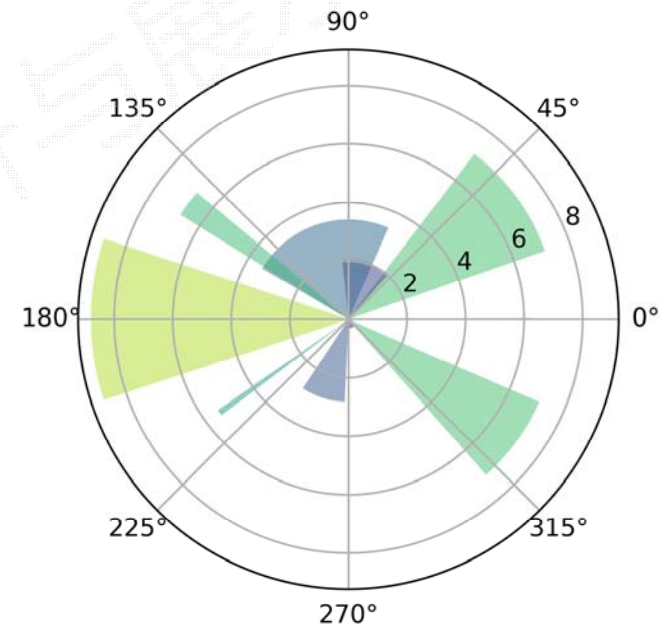
```
import numpy as np
import matplotlib.pyplot as plt

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()
```





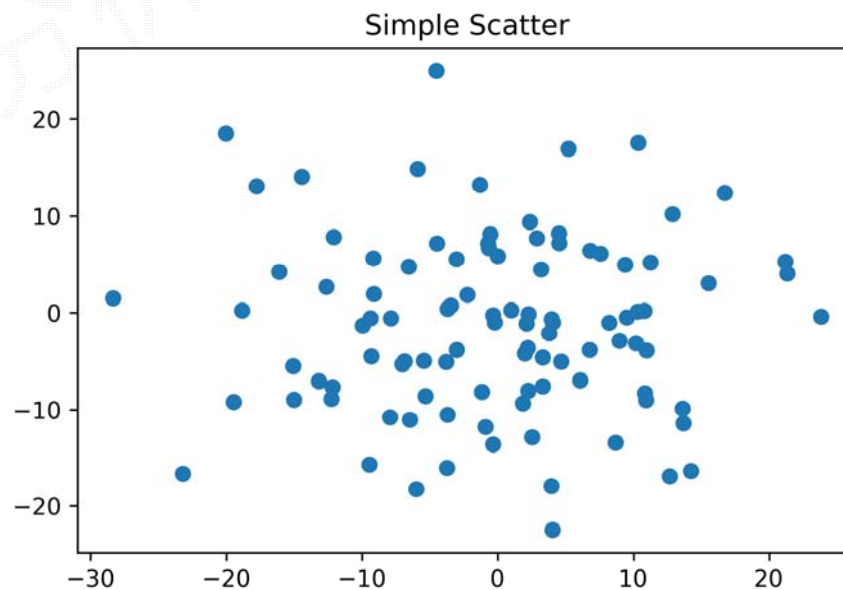
pyplot散点图的绘制

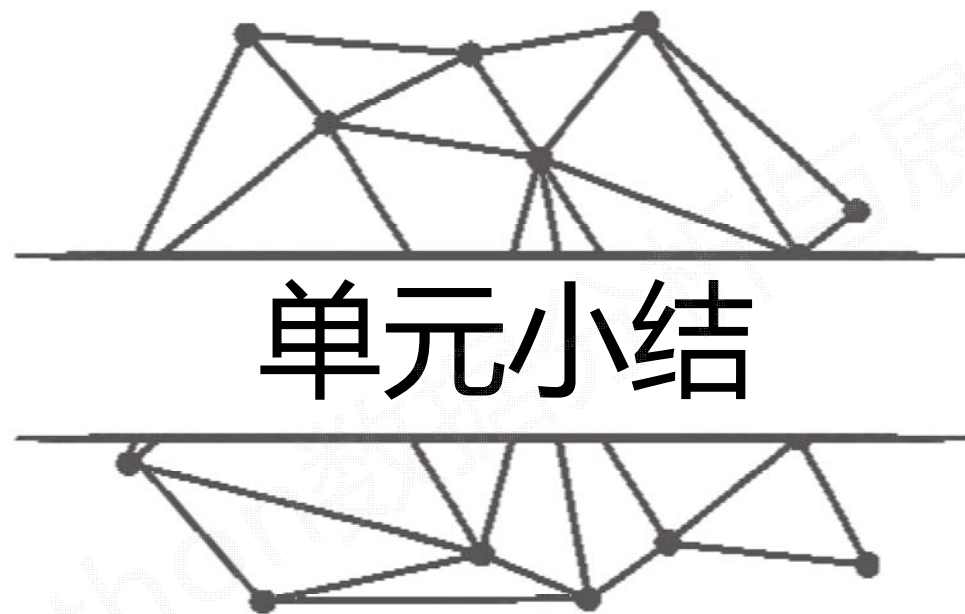
面向对象绘制散点图

```
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()
```





Python 技术展示

Matplotlib基础绘图函数示例

