

- 1、Seaborn介绍
- 2、安装
- 3、快速上手
 - 3.1、样式设置
 - 3.2、线形图
- 4、各种图形绘制
 - 4.1、调色板
 - 4.2、线形图
 - 4.3、散点图
 - 4.4、柱状图
 - 4.5、箱式图
 - 4.6、直方图
 - 4.7、分类散点图
 - 4.8、热力图

1、Seaborn介绍

Seaborn是基于matplotlib的图形可视化python包。它提供了一种高度交互式界面，便于用户能够做出各种有吸引力的统计图表。

Seaborn是在matplotlib的基础上进行了更高级的API封装，从而使得作图更加容易，在大多数情况下使用seaborn能做出很具有吸引力的图，而使用matplotlib就能制作具有更多特色的图。应该把Seaborn视为matplotlib的补充，而不是替代物。

2、安装

pip install seaborn -i <https://pypi.tuna.tsinghua.edu.cn/simple>

[教程](#)

3、快速上手

3.1、样式设置

```
import seaborn as sns
sns.set(style = 'darkgrid',context = 'talk',font = 'STKaiti')
```

style设置，修改主题风格，属性如下：

| style | 效果 |
|-----------|------------|
| darkgrid | 黑色网格（默认） |
| whitegrid | 白色网格 |
| dark | 黑色背景 |
| white | 白色背景 |
| ticks | 四周有刻度线的白背景 |

context设置, 修改大小, 属性如下:

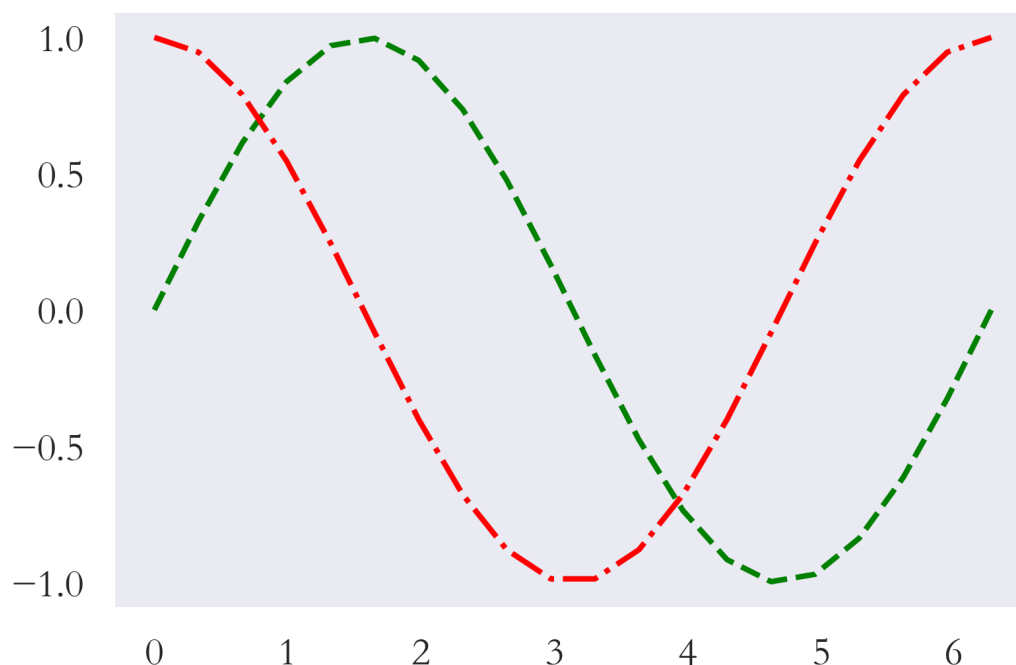
| context | 效果 |
|---------------|----------|
| paper | 越来越大越来越粗 |
| notebook (默认) | 越来越大越来越粗 |
| talk | 越来越大越来越粗 |
| poster | 越来越大越来越粗 |

3.2、线形图

```
import seaborn as sns
import matplotlib.pyplot as plt
import pandas as pd
import numpy as np
sns.set(style = 'dark',context = 'poster',font = 'STKaiti') # 设置样式
plt.figure(figsize=(9,6))

x = np.linspace(0,2*np.pi,20)
y = np.sin(x)

sns.lineplot(x = x,y = y,color = 'green',ls = '--')
sns.lineplot(x = x,y = np.cos(x),color = 'red',ls = '-.')
```



4、各种图形绘制

4.1、调色板

参数palette (调色板) , 用于调整颜色, 系统默认提供了六种选择: `deep, muted, bright, pastel, dark, colorblind`

参数palette调色板, 可以有更多的颜色选择, Matplotlib为我们提供了多大178种, 这足够绘图用, 可以通过代码`print(plt.colormaps())`查看选择

| |
|----------|
| 178种 |
| Accent |
| Accent_r |
| Blues |
| Blues_r |
| |

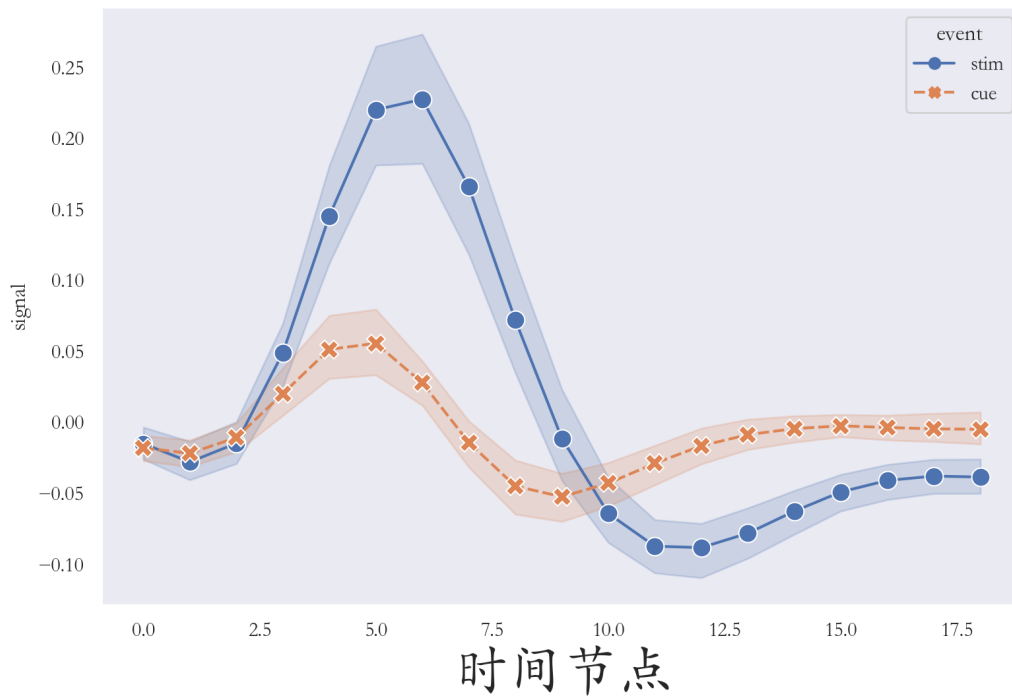
4.2、线形图

```
import seaborn as sns
import matplotlib.pyplot as plt
import pandas as pd
sns.set(style = 'dark',context = 'notebook',font = 'STKaiti') # 设置样式
plt.figure(figsize=(9,6))
fmri = pd.read_csv('./fmri.csv') # fmri这一核磁共振数据

ax = sns.lineplot(x = 'timepoint',y = 'signal',
                  hue = 'event',style = 'event' ,
                  data= fmri,
                  palette='deep',
                  markers=True,
                  markersize = 10)

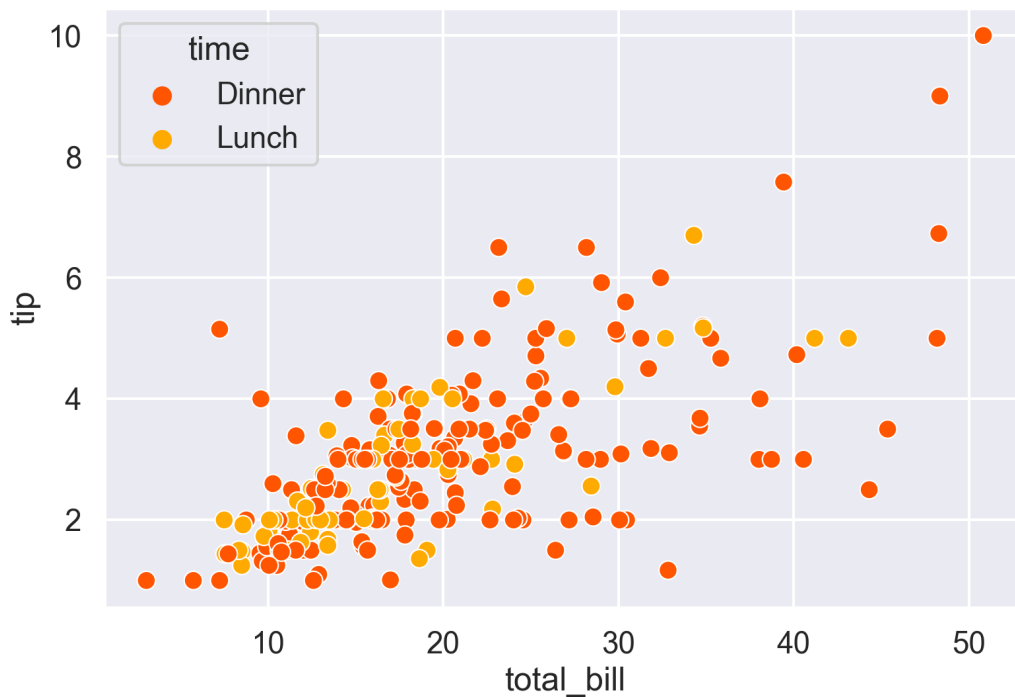
plt.xlabel('时间节点',fontsize = 30)
plt.savefig('./线形图.png',dpi = 200)
```

lineplot()函数作用是绘制**线型图**。参数x、y, 表示**横纵坐标**; 参数hue, 表示根据属性**分类**绘制**两条线** ("event"属性分两类"stim"、"cue"); 参数style, 表示根据属性分类设置**样式**, 实线和虚线; 参数data, 表示**数据**; 参数marker、markersize, 分别表示画图**标记点**以及**尺寸大小**!



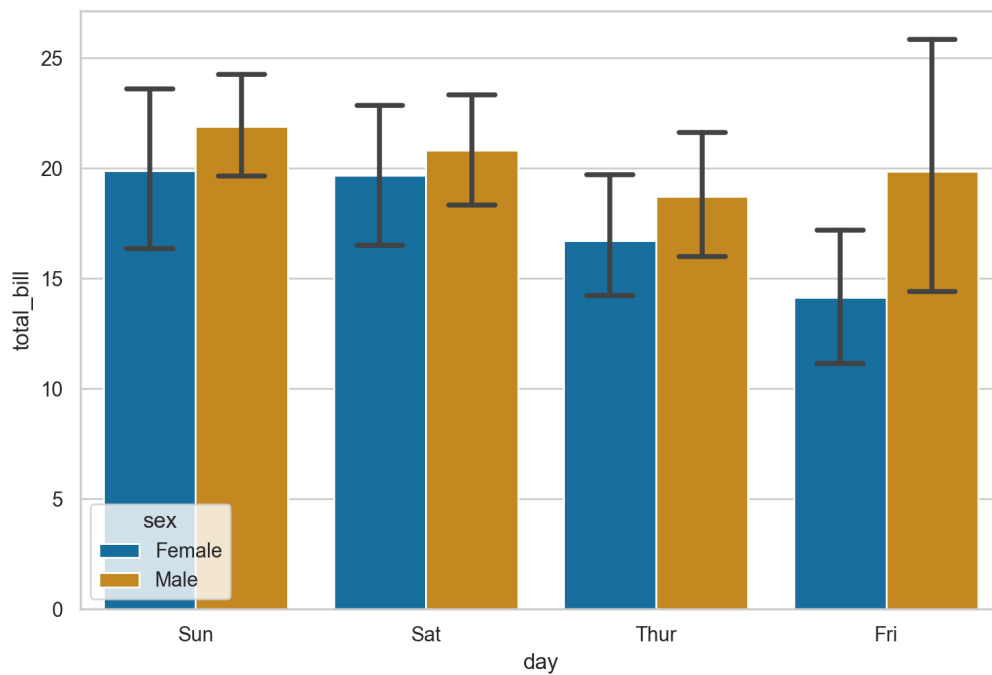
4.3、散点图

```
import matplotlib.pyplot as plt
import seaborn as sns
data = pd.read_csv('./tips.csv') # 小费
plt.figure(figsize=(9,6))
sns.set(style = 'darkgrid',context = 'talk')
# 散点图
fig = sns.scatterplot(x = 'total_bill', y = 'tip',
                      hue = 'time', data = data,
                      palette = 'autumn', s = 100)
```



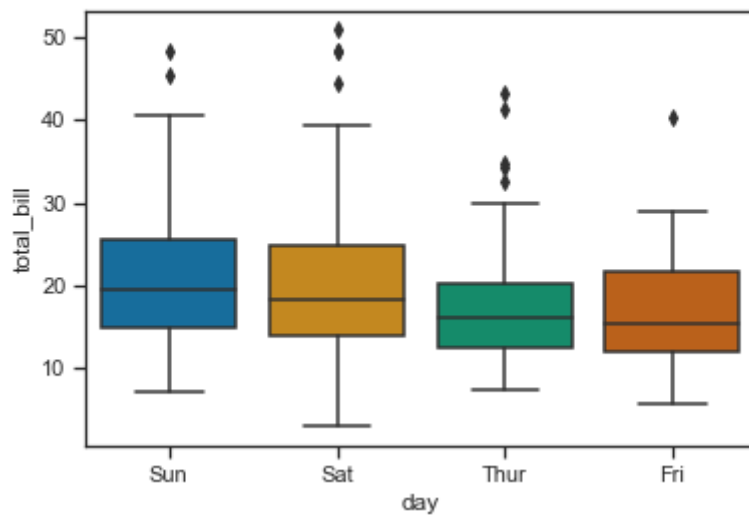
4.4、柱状图

```
import seaborn as sns
import matplotlib.pyplot as plt
plt.figure(figsize = (9,6))
sns.set(style = 'whitegrid')
tips = pd.read_csv('./tips.csv') # 小费
ax = sns.barplot(x = "day", y = "total_bill",
                 data = tips, hue = 'sex',
                 palette = 'colorblind',
                 capsize = 0.2)
```



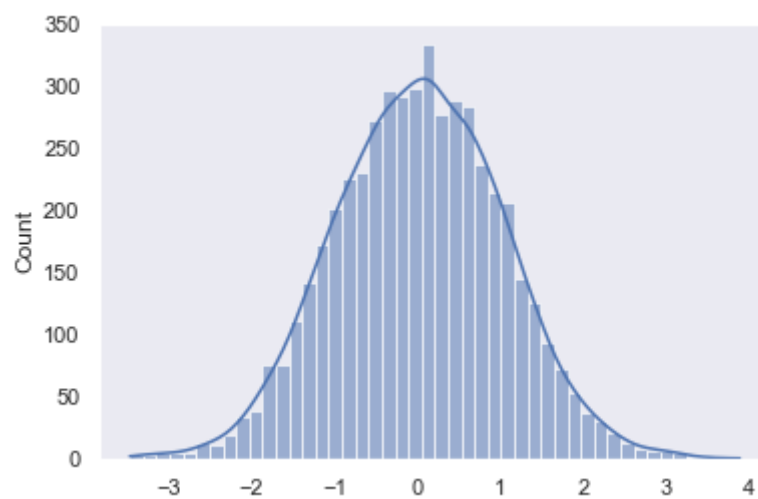
4.5、箱式图

```
import seaborn as sns
import matplotlib.pyplot as plt
import pandas as pd
sns.set(style = 'ticks')
tips = pd.read_csv('./tips.csv')
ax = sns.boxplot(x="day", y="total_bill", data=tips, palette='colorblind')
```

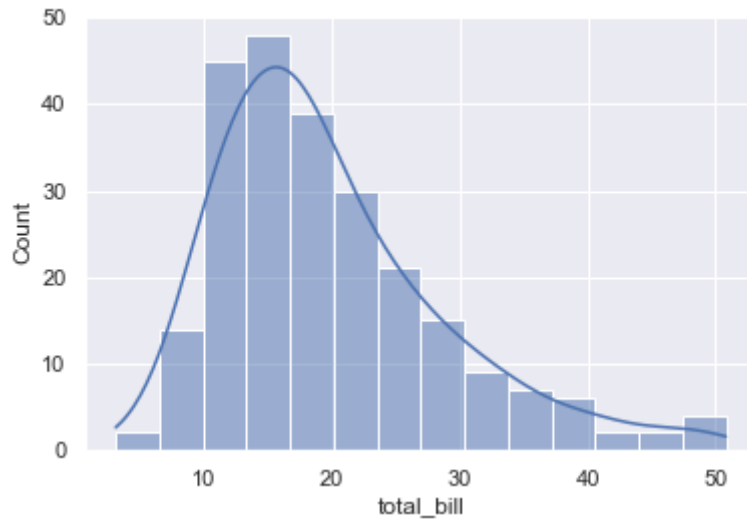


4.6、直方图

```
import seaborn as sns
import numpy as np
import matplotlib.pyplot as plt
sns.set(style = 'dark')
x = np.random.randn(5000)
sns.histplot(x, kde = True)
```

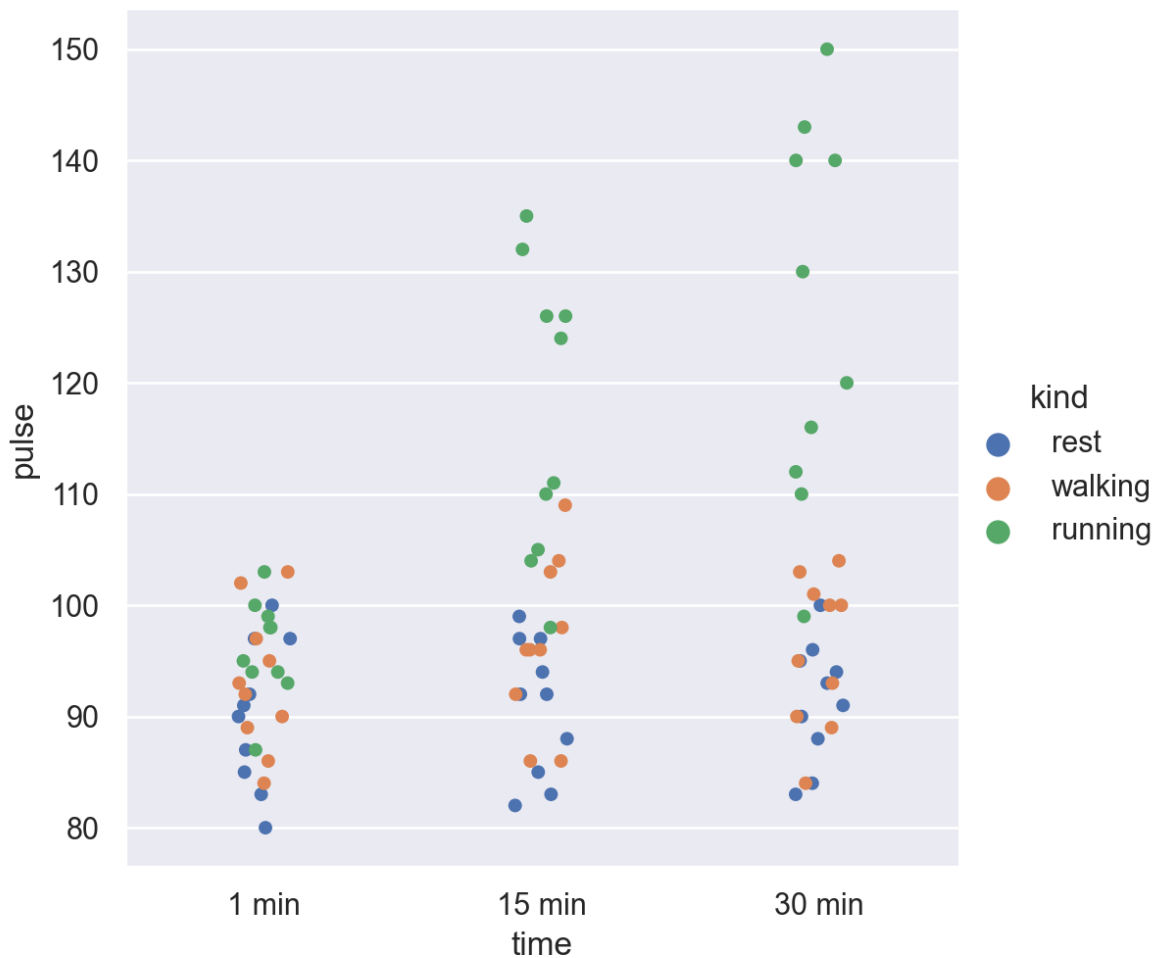


```
import seaborn as sns
import numpy as np
import matplotlib.pyplot as plt
import pandas as pd
sns.set(style = 'darkgrid')
tips = pd.read_csv('./tips.csv')
sns.histplot(x = 'total_bill', data = tips, kde = True)
```



4.7、分类散点图

```
import seaborn as sns
import matplotlib.pyplot as plt
import pandas as pd
sns.set(style = 'darkgrid')
exercise = pd.read_csv('./exercise.csv')
sns.catplot(x="time", y="pulse", hue="kind", data=exercise)
```



4.8、热力图

```
import matplotlib.pyplot as plt
import seaborn as sns
plt.figure(figsize=(12,9))
flights = pd.read_csv('./flights.csv')

flights = flights.pivot("month", "year", "passengers")
sns.heatmap(flights, annot=True,fmt = 'd',cmap = 'RdBu_r',
            linewidths=0.5)
```

