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')
```

stlyle设置，修改主题风格，属性如下：

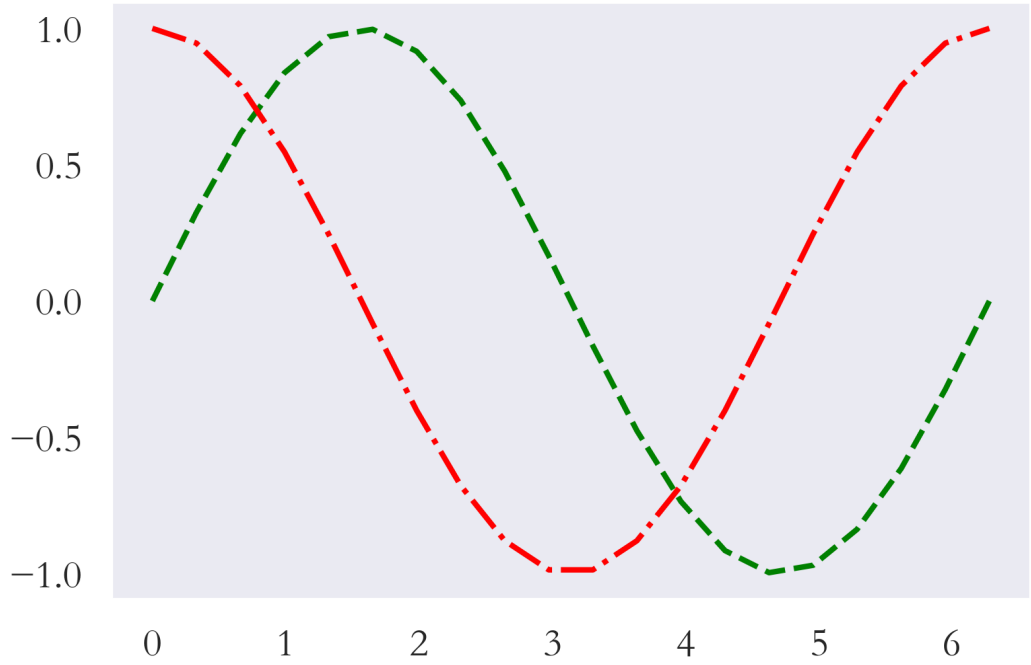
style	效果
darkgrid	黑色网格（默认）
whitegrid	白色网格
dark	黑色背景
white	白色背景
ticks	四周有刻度线的白背景

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`

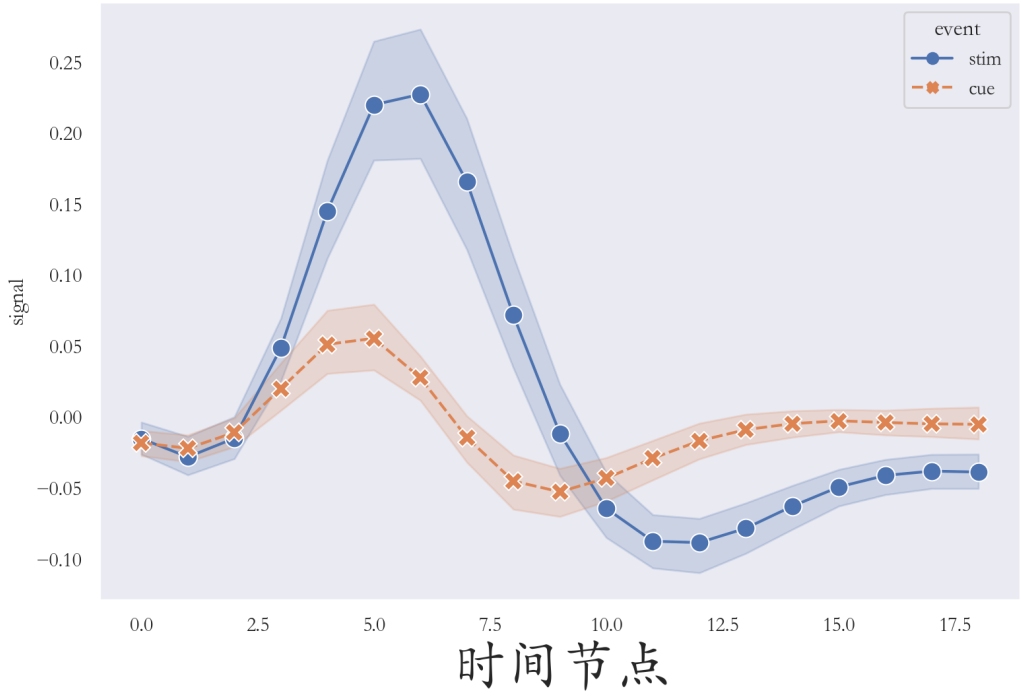
参数palette调色板，可以有更多的颜色选择，Matplotlib为我们提供了多大178种，这足够绘图用，可以通过代码**print(plt.colormaps())**查看选择

178种
Accent
Accent_r
Blues
Blues_r
……

4.2、线形图

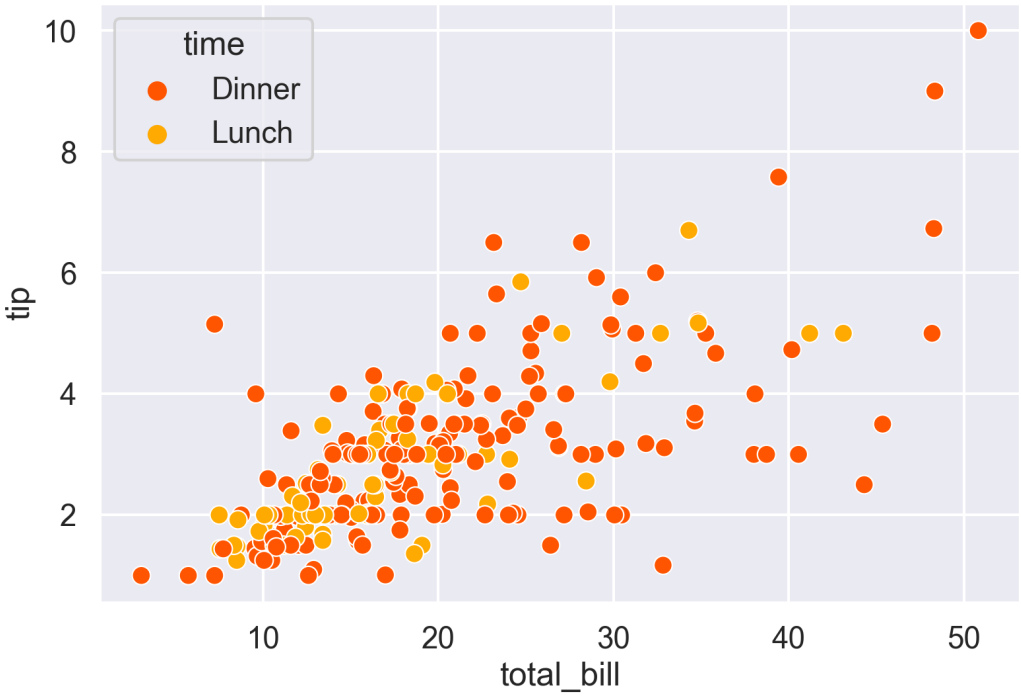
```
import seaborn as sns
import matplotlib.pyplot as plt
import pandas as pd
sns.set(style = 'dark',context = 'notebook',font = 'STKaiti') # 设置样式
plt.figure(figsize=(9,6))
fmri = pd.read_csv('./fmri.csv') # fmri这一核磁共振数据

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**！



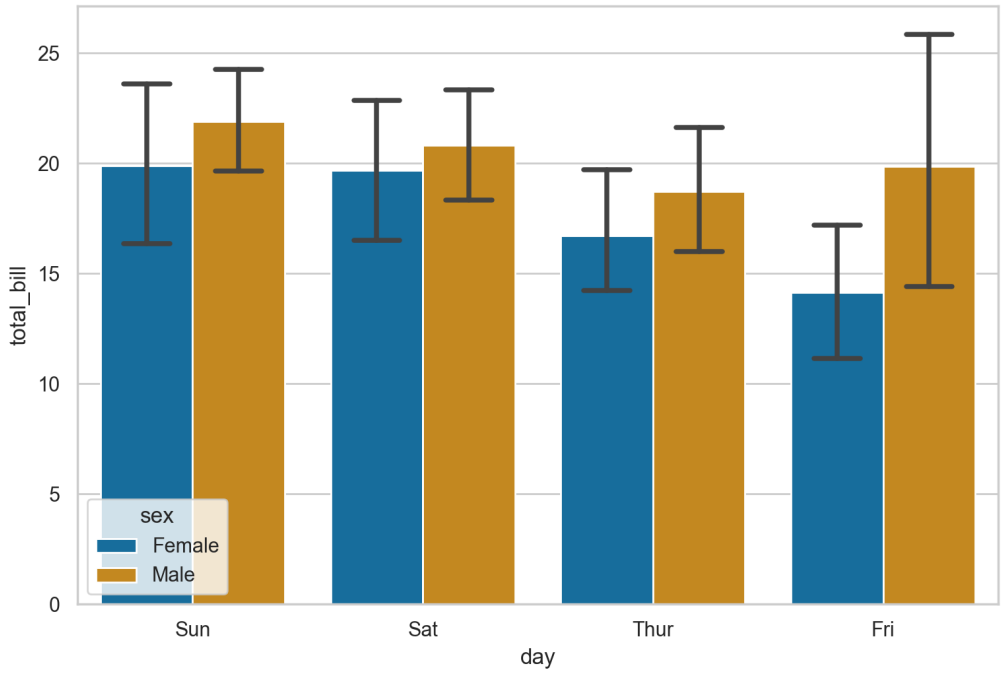
4.3、散点图

```
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)
```



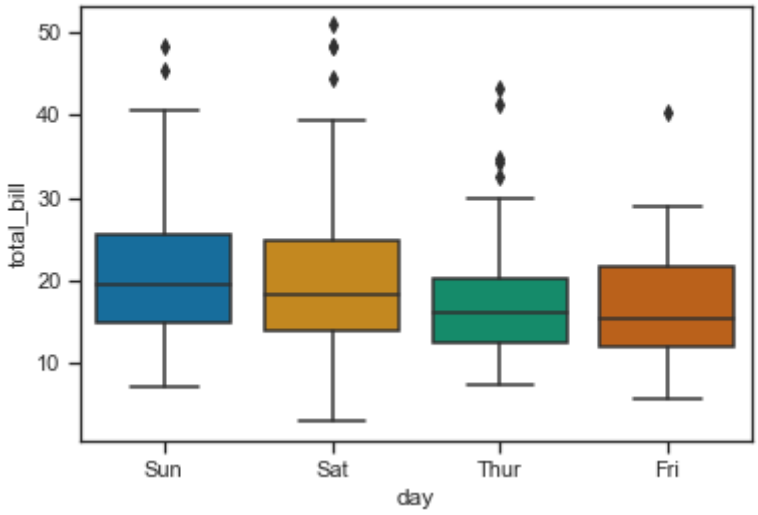
4.4、柱状图

```
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)
```



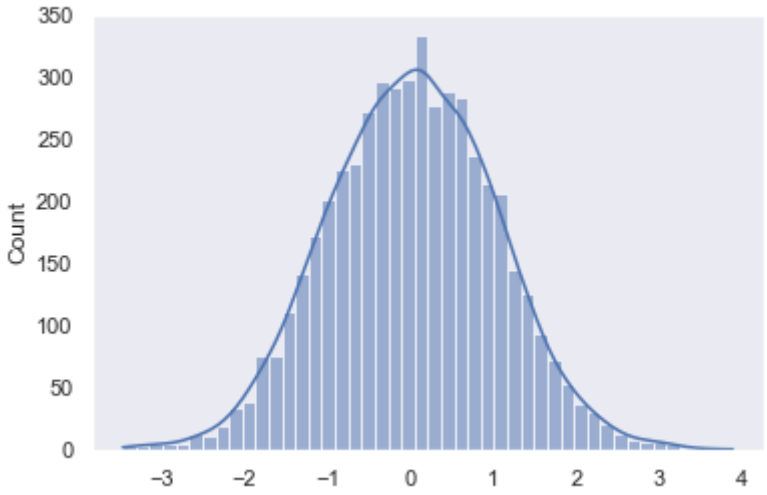
4.5、箱式图

```
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')
```

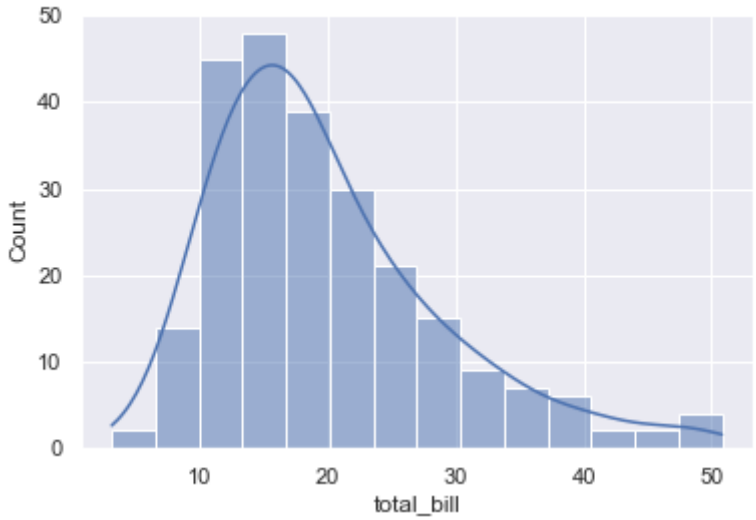


4.6、直方图

```
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)
```

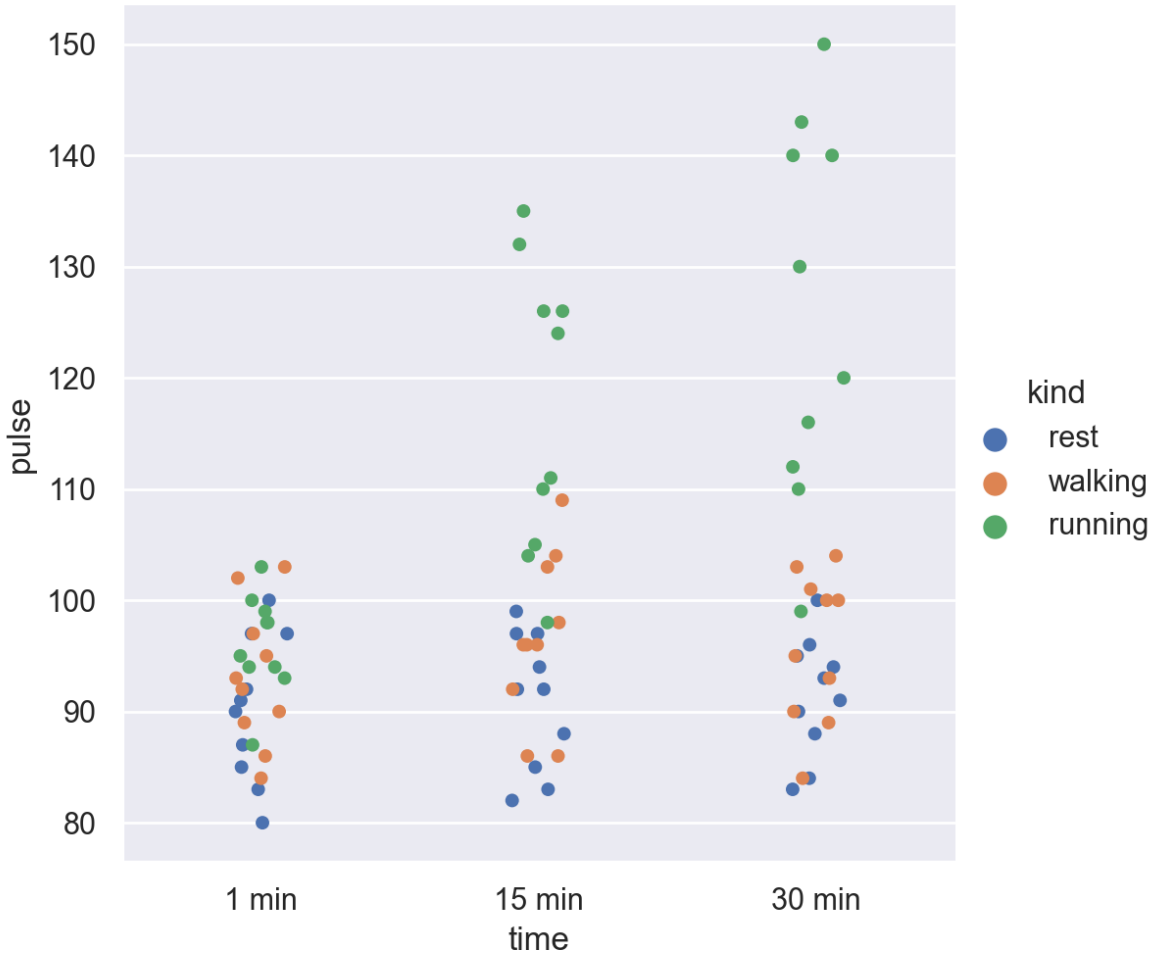



```
import seaborn as sns
import numpy as np
import matplotlib.pyplot as plt
import pandas as pd
sns.set(style = 'darkgrid')
tips = pd.read_csv('./tips.csv')
sns.histplot(x = 'total_bill', data = tips, kde = True)
```



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)
```