



Python数据科学速查表

Bokeh

呆鸟译

3 渲染器与自定义可视化

图符号

```
散点标记
>>> p1.circle(np.array([1,2,3]), np.array([3,2,1]),
              fill_color='white')
>>> p2.square(np.array([1.5,3.5,5.5]), [1,4,3],
```

```
线型图符号
>>> p1.line([1,2,3,4], [3,4,5,6], line_width=2)
>>> p2.multi_line(pd.DataFrame([[1,2,3],[5,6,7]]),
                  pd.DataFrame([[3,4,5],[3,2,1]]),
                  color="blue")
```

自定义图符号 参阅 数据

```
图符号选择与反选
>>> p = figure(tools='box_select')
>>> p.circle('mpg', 'cyl', source=cds_df,
            selection_color='red',
            nonselection_alpha=0.1)
```

```
绘图区内部
>>> from bokeh.models import HoverTool
>>> hover = HoverTool(tooltips=None,
                      mode='vline') >>> p3.add_tools(hover)
```

```
色彩表
>>> from bokeh.models import CategoricalColorMapper
>>> color_mapper = CategoricalColorMapper(
                    factors=['US', 'Asia', 'Europe'],
                    palette=['blue', 'red', 'green'])
>>> p3.circle('mpg', 'cyl', source=cds_df,
             color=dict(field='origin',
                       transform=color_mapper),
             legend='Origin')
```

图例位置

```
绘图区内部
>>> p.legend.location = 'bottom_left'
绘图区外部
>>> from bokeh.models import Legend
>>> r1 = p2.asterisk(np.array([1,2,3]), np.array([3,2,1])
>>> r2 = p2.line([1,2,3,4], [3,4,5,6])
>>> legend = Legend(items=[("One", [p1, r1]), ("Two", [r2])],
                    location=(0, -30))
>>> p.add_layout(legend, 'right')
```

图例方向

```
>>> p.legend.orientation = "horizontal"
>>> p.legend.orientation = "vertical"
```

图例背景与边框

```
>>> p.legend.border_line_color = "navy"
>>> p.legend.background_fill_color = "white"
```

行列布局

```
行
>>> from bokeh.layouts import row
>>> layout = row(p1,p2,p3)
```

```
列
>>> from bokeh.layouts import columns
>>> layout = column(p1,p2,p3)
行列嵌套
>>> layout = row(column(p1,p2), p3)
```

栅格布局

```
>>> from bokeh.layouts import gridplot
>>> row1 = [p1,p2]
>>> row2 = [p3]
>>> layout = gridplot([[p1,p2],[p3]])
```

标签布局

```
>>> from bokeh.models.widgets import Panel, Tabs
>>> tab1 = Panel(child=p1, title="tab1")
>>> tab2 = Panel(child=p2, title="tab2")
>>> layout = Tabs(tabs=[tab1, tab2])
```

链接图

```
链接坐标轴
>>> p2.x_range = p1.x_range
>>> p2.y_range = p1.y_range
链接刷
>>> p4 = figure(plot_width = 100,
               tools='box_select,lasso_select')
>>> p4.circle('mpg', 'cyl', source=cds_df)
>>> p5 = figure(plot_width = 200,
               tools='box_select,lasso_select')
>>> p5.circle('mpg', 'hp', source=cds_df)
>>> layout = row(p4,p5)
```

4 输出与导出

Notebook

```
>>> from bokeh.io import output_notebook, show
>>> output_notebook()
```

HTML

```
脱机HTML
>>> from bokeh.embed import file_html
>>> from bokeh.resources import CDN
>>> html = file_html(p, CDN, "my_plot")
```

```
>>> from bokeh.io import output_file, show
>>> output_file('my_bar_chart.html', mode='cdn')
```

组件

```
>>> from bokeh.embed import components
>>> script, div = components(p)
```

PNG

```
>>> from bokeh.io import export_png
>>> export_png(p, filename="plot.png")
```

SVG

```
>>> from bokeh.io import export_svgs
>>> p.output_backend = "svg"
>>> export_svgs(p, filename="plot.svg")
```

5 显示或保存图形

```
>>> show(p1) >>> show(layout)
>>> save(p1) >>> save(layout)
```

原文作者

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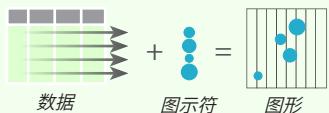


使用 Bokeh 绘图

Bokeh 是 Python 的交互式可视图库，用于生成在浏览器里显示的大规模数据集高性能视图。



Bokeh 的中间层通用 bokeh.plotting 界面主要为两个组件：数据与图符号。



使用 bokeh.plotting 界面绘图的基本步骤为：

1. 准备数据
Python列表、Numpy数组、Pandas数据框或其它序列值
2. 创建图形
3. 为数据添加渲染器，自定义可视化图
4. 指定生成的输出类型
5. 显示视图或保存结果

```
>>> from bokeh.plotting import figure
>>> from bokeh.io import output_file, show
>>> x = [1, 2, 3, 4, 5]
>>> y = [6, 7, 2, 4, 5]
>>> p = figure(title="simple line example",
              x_axis_label='x',
              y_axis_label='y')
>>> p.line(x, y, legend="Temp.", line_width=2)
>>> output_file("lines.html")
>>> show(p)
```

1 数据 参阅列表、Numpy 及 Pandas

通常，Bokeh在后台把数据转换为列数据源，不过也可手动转换：

```
>>> import numpy as np
>>> import pandas as pd
>>> df = pd.DataFrame(np.array([[33.9,4,65, 'US'],
                              [32.4,4,66, 'Asia'],
                              [21.4,4,109, 'Europe']]),
                    columns=['mpg','cyl', 'hp', 'origin'],
                    index=['Toyota', 'Fiat', 'Volvo'])
>>> from bokeh.models import ColumnDataSource
>>> cds_df = ColumnDataSource(df)
```

2 绘图

```
>>> from bokeh.plotting import figure
>>> p1 = figure(plot_width=300, tools='pan,box_zoom')
>>> p2 = figure(plot_width=300, plot_height=300,
              x_range=(0, 8), y_range=(0, 8))
>>> p3 = figure()
```