

Python For Data Science Cheat Sheet

Seaborn

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Statistical Data Visualization With Seaborn

The Python visualization library Seaborn is based on matplotlib and provides a high-level interface for drawing attractive statistical graphics.

Make use of the following aliases to import the libraries:

```
>>> import matplotlib.pyplot as plt
>>> import seaborn as sns
```

The basic steps to creating plots with Seaborn are:

1. Prepare some data
2. Control figure aesthetics
3. Plot with Seaborn
4. Further customize your plot

```
>>> import matplotlib.pyplot as plt
>>> import seaborn as sns
>>> tips = sns.load_dataset("tips")
>>> sns.set_style("whitegrid")
>>> g = sns.lmplot(x="tip",
                  y="total_bill",
                  data=tips,
                  aspect=2)
>>> g = (g.set_axis_labels("Tip", "Total bill(USD)").
set(xlim=(0,10),ylim=(0,100)))
>>> plt.title("title")
>>> plt.show(g)
```

1 Data

Also see Lists, NumPy & Pandas

```
>>> import pandas as pd
>>> import numpy as np
>>> uniform_data = np.random.rand(10, 12)
>>> data = pd.DataFrame({'x':np.arange(1,101),
                        'y':np.random.normal(0,4,100)})
```

Seaborn also offers built-in data sets:

```
>>> titanic = sns.load_dataset("titanic")
>>> iris = sns.load_dataset("iris")
```

2 Figure Aesthetics

Also see Matplotlib

```
>>> f, ax = plt.subplots(figsize=(5,6))
```

Create a figure and one subplot

Seaborn styles

```
>>> sns.set()
>>> sns.set_style("whitegrid")
>>> sns.set_style("ticks",
{"xtick.major.size":8,
"ytick.major.size":8})
>>> sns.axes_style("whitegrid")
```

(Re)set the seaborn default
Set the matplotlib parameters
Set the matplotlib parameters

Return a dict of params or use with
with to temporarily set the style

Context Functions

<pre>>>> sns.set_context("talk") >>> sns.set_context("notebook", font_scale=1.5, rc={"lines.linewidth":2.5})</pre>	Set context to "talk" Set context to "notebook", Scale font elements and override param mapping
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Color Palette

<pre>>>> sns.set_palette("husl",3)</pre>	Define the color palette
<pre>>>> sns.color_palette("husl")</pre>	Use with with to temporarily set palette
<pre>>>> flatui = ["#9b59b6", "#3498db", "#95a5a6", "#e74c3c", "#34495e", "#2ecc71"]</pre>	
<pre>>>> sns.set_palette(flatui)</pre>	Set your own color palette

3 Plotting With Seaborn

Axis Grids

<pre>>>> g = sns.FacetGrid(titanic, col="survived", row="sex") >>> g = g.map(plt.hist, "age") >>> sns.factorplot(x="pclass", y="survived", hue="sex", data=titanic) >>> sns.lmplot(x="sepal_width", y="sepal_length", hue="species", data=iris) >>> h = sns.PairGrid(iris) >>> h = h.map(plt.scatter) >>> sns.pairplot(iris) >>> i = sns.JointGrid(x="x", y="y", data=data) >>> i = i.plot(sns.regplot, sns.distplot) >>> sns.jointplot("sepal_length", "sepal_width", data=iris, kind='kde')</pre>	Subplot grid for plotting conditional relationships Draw a categorical plot onto a Facetgrid Plot data and regression model fits across a FacetGrid Subplot grid for plotting pairwise relationships Plot pairwise bivariate distributions Grid for bivariate plot with marginal univariate plots Plot bivariate distribution
---	---

Categorical Plots

<h4>Scatterplot</h4> <pre>>>> sns.stripplot(x="species", y="petal_length", data=iris) >>> sns.swarmplot(x="species", y="petal_length", data=iris)</pre>	Scatterplot with one categorical variable Categorical scatterplot with non-overlapping points
<h4>Bar Chart</h4> <pre>>>> sns.barplot(x="sex", y="survived", hue="class", data=titanic) Count Plot >>> sns.countplot(x="deck", data=titanic, palette="Greens_d")</pre>	Show point estimates and confidence intervals with scatterplot glyphs Show count of observations
<h4>Point Plot</h4> <pre>>>> sns.pointplot(x="class", y="survived", hue="sex", data=titanic, palette={"male": "g", "female": "m"}, markers=["^", "o"], linestyle=["-", "--"])</pre>	Show point estimates and confidence intervals as rectangular bars

Boxplot <pre>>>> sns.boxplot(x="alive", y="age", hue="adult_male", data=titanic) >>> sns.boxplot(data=iris,orient="h")</pre>	 Boxplot Boxplot with wide-form data
Violinplot <pre>>>> sns.violinplot(x="age", y="sex", hue="survived", data=titanic)</pre>	Violin plot

Regression Plots

<pre>>>> sns.regplot(x="sepal_width", y="sepal_length", data=iris, ax=ax)</pre>	Plot data and a linear regression model fit
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Distribution Plots

<pre>>>> plot = sns.distplot(data.y, kde=False, color="b")</pre>	Plot univariate distribution
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Matrix Plots

<pre>>>> sns.heatmap(uniform_data,vmin=0,vmax=1)</pre>	Heatmap
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4

Further Customizations

Also see Matplotlib

Axisgrid Objects

<pre>>>> g.despine(left=True) >>> g.set_ylabels("Survived") >>> g.set_xticklabels(rotation=45) >>> g.set_axis_labels("Survived", "Sex") >>> h.set(xlim=(0,5), ylim=(0,5), x-and y-axis xticks=[0,2.5,5], yticks=[0,2.5,5])</pre>	 Remove left spine Set the labels of the y-axis Set the tick labels for x Set the axis labels Set the limit and ticks of the
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Plot

<pre>>>> plt.title("A Title") >>> plt.ylabel("Survived") >>> plt.xlabel("Sex") >>> plt.ylim(0,100) >>> plt.xlim(0,10) >>> plt.setp(ax,yticks=[0,5]) >>> plt.tight_layout()</pre>	 Add plot title Adjust the label of the y-axis Adjust the label of the x-axis Adjust the limits of the y-axis Adjust the limits of the x-axis Adjust a plot property Adjust subplot params
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5

Show or Save Plot

Also see Matplotlib

<pre>>>> plt.show() >>> plt.savefig("foo.png") >>> plt.savefig("foo.png", transparent=True)</pre>	 Show the plot Save the plot as a figure Save transparent figure
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Close & Clear

Also see Matplotlib

<pre>>>> plt.cla() >>> plt.clf() >>> plt.close()</pre>	 Clear an axis Clear an entire figure Close a window
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