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How to Use the ggplot in Python for Visualization?

A guide on using ggplot for data visualization



Tenisha D · [Follow](#)

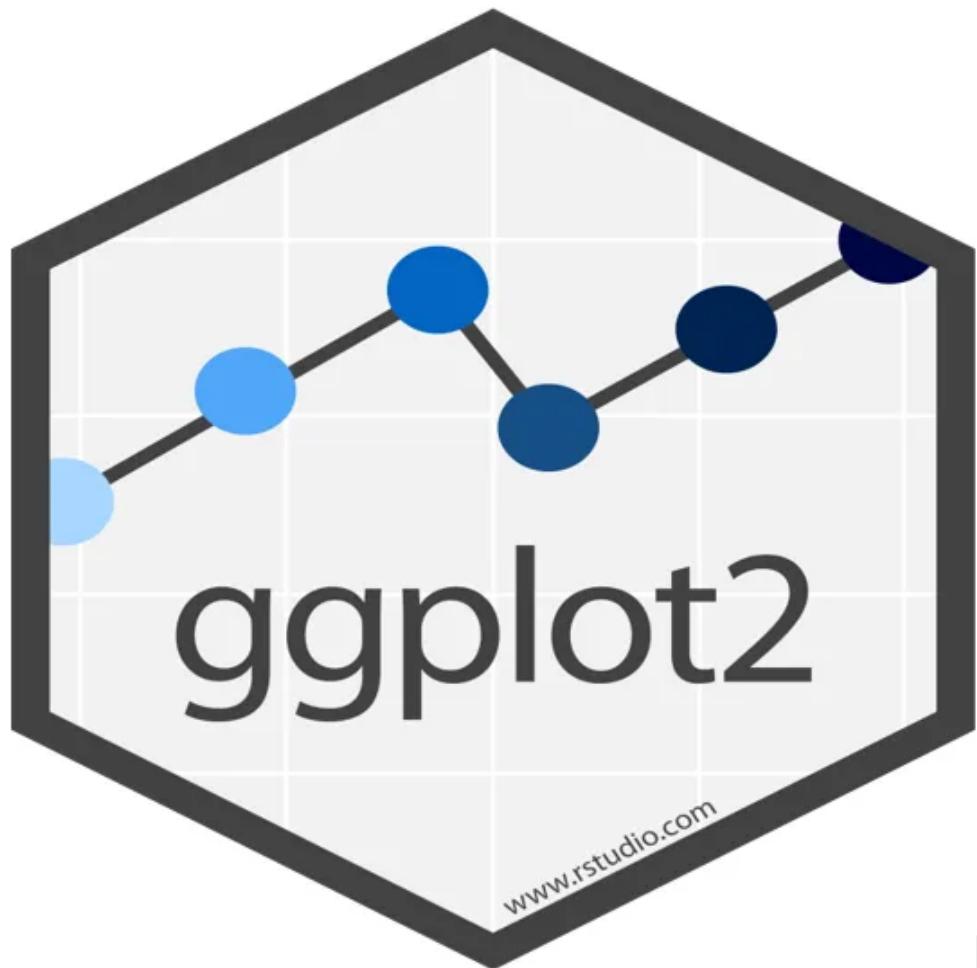
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As a beginner, if you used R programming as an initial tool for Data Analysis, then you must know that the library ‘**ggplot2**’ is a prominent tool for Visualisation. It is a plotting package that helps you to create simple to complex plots from data in a data frame.

What is ggplot?

ggplot2 provides a more programmatic interface for specifying what variables to plot, how they are displayed, and general visual properties. Therefore, we only need minimal changes if the underlying data change or if we decide to change from a bar plot to a scatterplot. This helps in creating publication-quality plots with minimal amounts of adjustments and tweaking. **ggplot** graphics are built layer by layer by adding new elements that's why **ggplot** refers to ‘**The grammar of graphics plot — ggplot**’. Adding layers in this fashion allows for extensive flexibility and customization of plots.

Basic Building blocks in ggplot()

1. **data** — The dataset.
2. **aes** — aesthetic mappings that describe variables.
3. **geom** — Geometric objects, represent what you actually see on the plot: points, lines, polygons, etc.
4. **stats** — Statistical transformations and summarising data in many useful ways.
5. **scale** — The scales map values in the data space to values in an aesthetic space.
6. **coord** — A coordinate system, describes how data coordinates are mapped to the plane of the graphic.
7. **facet** — A faceting specification describes how to break up the data into subsets for plotting individual sets.
8. **themes** — Themes can be used to give plots a consistent customized look such as titles, labels, fonts, background, gridlines, and legends.

Combining **ggplot2** and **plotly** in R Programming gives you beautiful interactive plots for visualization. The same can be done in python by integrating many plotting features.

ggplot in Python

Python has a number of powerful plotting libraries to choose from. One of the oldest and most popular is [matplotlib](#) - it forms the foundation for many other Python plotting libraries. We are going to use [plotnine](#) which is a Python implementation of the ggplot .

plotnine is an implementation of a *grammar of graphics* in Python, it is based on [ggplot2](#). The grammar allows users to compose plots by explicitly mapping data to the visual objects that make up the plot. Plotting with grammar is powerful, it makes custom (and otherwise complex) plots easy to think about and then create, while the simple plots remain simple.

Implementation in Python:

The first step is to install plotnine.

```
# install plotnine
!pip install pandas plotnine
```

Run the below code to suppress the deprecation warnings from plotnine.

```
# to avoid warnings
import warnings
warnings.filterwarnings('ignore')
```

Next, we need to import the required plotnine components of ggplot in python. Also, import the [mtcars](#) dataset for implementation.

```
# import plotnine components and mtcars dataset
from plotnine import ggplot, geom_point, aes, stat_smooth,
facet_wrap
from plotnine.data import mtcars
```

Now, we can plot a linear model for mtcars using ggplot in Python.

```
# plot linear model for mtcars dataset using ggplot in python
```

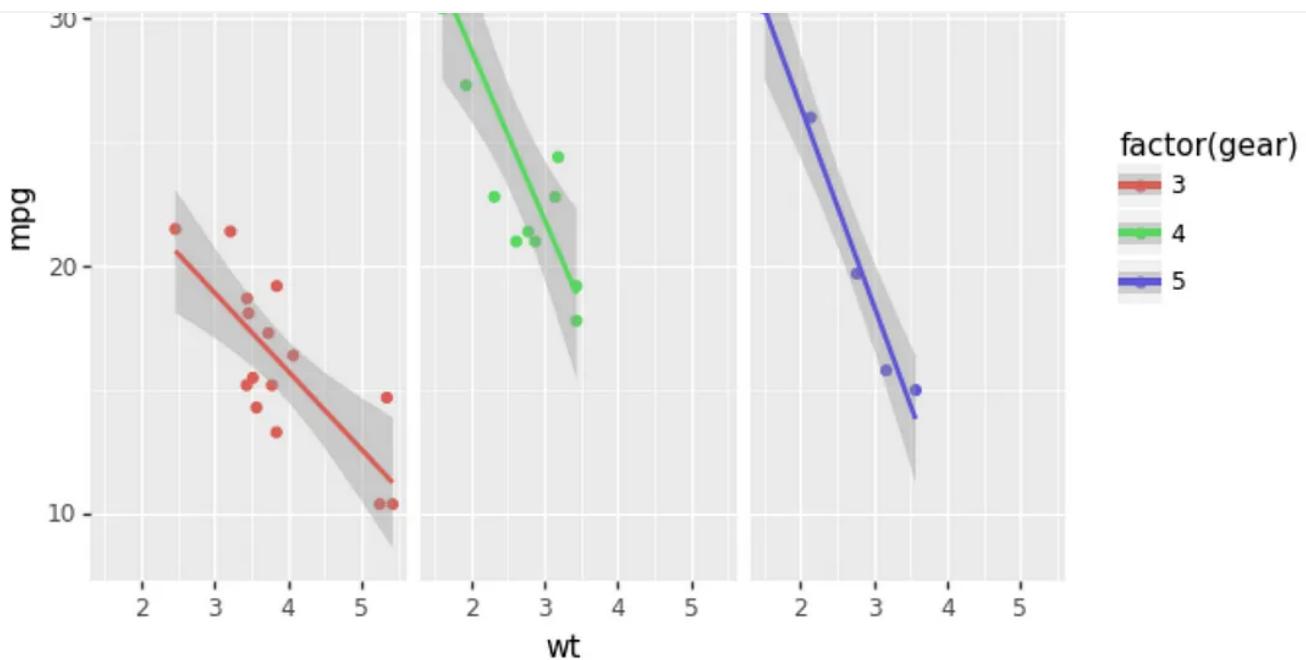
```
(ggplot(mtcars, aes('wt', 'mpg', color='factor(gear)'))
+ geom_point()
+ stat_smooth(method='lm')
+ facet_wrap('~gear')
+ ggtitle('Linear Model for mtcars'))
```

Linear Model for mtcars

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Linear Model for mtcars

Python comes with lots of different features that allow users to make customizable, elegant, and interactive plots. Like R Programming, we can combine ggplot and plotly in Python. It can be done by importing the `plotly` library.

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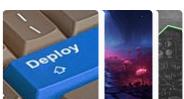
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