



## GETTING STARTED

### 1. Install

In the terminal  
`sudo pip install plotly`

### 2. Sign Up & Configure

<http://www.plot.ly/python/getting-started>

### 3. Boilerplate Imports

```
import plotly.plotly as py
import plotly.graph_objs as go
```

### 4. A Hello World Figure

```
trace = {'x': [1, 2], 'y': [1, 2]}
data = [trace]
data = {}
fig = go.Figure (
    data = data, layout = layout )
```

### 5. Plot the Figure!

In the terminal  
`plot_url = py.plot ( fig )`  
Or in the IPython notebook:  
`py.plot ( fig )`

## BASIC CHARTS

### Line Plots

```
trace1 = go.Scatter (
    x = [ 1, 2 ], y = [ 1, 2 ])
trace2 = go.Scatter (
    x = [ 1, 2 ], y = [ 2, 1 ])
py.iplot ( [ trace1, trace2 ] )
```

### Bubble Charts

```
trace = go.Scatter (
    x = [ 1, 2, 3 ], y = [ 1, 2, 3 ],
    marker = dict (
        color = [ 'red', 'blue' ],
        size = [ 30, 80, 200 ],
        mode = 'markers' )
py.iplot ( [ trace ] )
```

### Scatter Plots

```
trace1 = go.Scatter (
    x = [ 1, 2, 3 ], y = [ 1, 2, 3 ],
    text = [ 'A', 'B', 'C' ],
    textposition = 'top center'
    mode = 'markers+text' )
mode = [ trace ]
py.iplot ( data )
```

### Heatmaps

```
trace = go.Heatmap (
    z = [ [ 1, 2, 3, 4 ],
          [ 5, 6, 7, 8 ] ] )
data = [ trace ]
py.iplot ( data )
```

### Bar Charts

```
trace = go.Bar (
    x = [ 1, 2 ], y = [ 1, 2 ])
data = [ trace ]
py.iplot ( data )
```

### Area Plots

```
trace = go.Scatter (
    x = [ 1, 2 ], y = [ 1, 2 ],
    fill = 'tonexty' )
data = [ trace ]
py.iplot ( data )
```

## LAYOUT

### Legends

```
trace1 = go.Scatter (
    name = 'Calvin'
    x = [ 1, 2 ], y = [ 1, 2 ] )
```

```
trace2 = go.Scatter (
    name = 'Hobbes'
    x = [ 2, 1 ], y = [ 2, 1 ] )
```

```
layout = go.Layout (
    showlegend = True ,
    legend = dict (
        x = 0.2, y = 0.5 )
    )
```

```
data = [ trace1, trace2 ]
fig = go.Figure (
    data = data ,
    layout = layout )
py.iplot ( fig )
```

### Axes

```
trace = go.Scatter (
    x = [ 1, 2, 3, 4 ],
    y = [ 1, 2, 3, 6 ] )
```

```
axis_template = dict (
    showgrid = False ,
    zeroline = False ,
    nticks = 20 ,
    showline = True ,
    title = 'X AXIS'
    mirror = 'all' )
layout = go.Layout (
    xaxis = axis_template ,
    yaxis = axis_template ,
    )
```

```
data = [ trace ]
fig = go.Figure (
    data = data
    layout = layout )
py.iplot ( fig )
```

## STATISTICAL CHARTS

### Histograms

```
trace = go.Histogram (
    x = [ 1, 2, 3, 3, 3, 4, 5 ] )
data = [ trace ]
py.iplot ( data )
```

### Box Plots

```
trace = go.Box (
    x = [ 1, 2, 3, 3, 3, 4, 5 ] )
data = [ trace ]
py.iplot ( data )
```

### 2D Histogram

```
trace = go.Histogram2d (
    x = [ 1, 2, 3, 3, 3, 4, 5 ],
    y = [ 1, 2, 3, 3, 3, 4, 5 ] )
data = [ trace ]
py.iplot ( data )
```

## MAPS

### Bubble Map

```
trace = dict (
    type = 'scattergeo' ,
    lon = [ 100, 400 ] , lat = [ 0, 0 ] ,
    marker = dict (
        marker = [ 'red' , 'blue' ]
        size = [ 30, 50 ] ) ,
    mode = 'markers' )
py.iplot ( [ trace ] )
```

### Choropleth Map

```
trc = dict (
    type = 'choropleth' ,
    locations = [ 'AZ' , 'CA' , 'VT' ] ,
    locationmode = 'USA-states' ,
    colorscale = [ 'Viridis' ] ,
    z = [ 10, 20, 40 ] )
lyt = dict ( geo = dict ( scope = 'usa' ) )
map = go.Figure ( data = [ trc ] ,
    layout = lyt )
py.iplot ( map )
```

### Scatter Map

```
trace = dict (
    type = 'scattergeo' ,
    lon = [ 42, 39 ] , lat = [ 12, 22 ] ,
    marker = [ 'Rome' , 'Greece' ] ,
    mode = 'markers' )
py.iplot ( [ trace ] )
```

## 3D CHARTS

### 3D Surface Plots

```
trace = go.Surface (
    colorscale = 'Viridis' ,
    z = [ [ 3, 5, 8, 13 ] ,
        [ 21, 13, 8, 5 ] ] )
data = [ trace ]
py.iplot ( data )
```

### 3D Line Plots

```
trace = go.Scatter3D (
    x = [ 9, 8, 5, 1 ] , y = [ 1, 2, 4, 8 ] ,
    z = [ 11, 8, 15, 3 ] ,
    mode = 'lines' )
data = [ trace ]
py.iplot ( data )
```

### 3D Scatter Plots

```
trace = go.Scatter3D (
    x = [ 9, 8, 5, 1 ] , y = [ 1, 2, 4, 8 ] ,
    z = [ 11, 8, 15, 3 ] ,
    mode = 'markers' )
data = [ trace ]
py.iplot ( data )
```

## FIGURE HIERARCHY

### Figure { }

```
DATA [ ]
    TRACE { }
        x, y, z [ ]
        color, text, size [ ]
        colorscale ABC or [ ]
    MARKER { }
        color ABC
        symbol ABC
    LINE { }
        color ABC
        width 123

LAYOUT { }
    title ABC
    XAXIS, YAXIS { }
    SCENE { }
        XAXIS, YAXIS, ZAXIS { }
    GEO { }
    LEGEND { }
    ANNOTATIONS { }
```

{ } = dictionary  
[ ] = list  
ABC = string  
123 = number