

Tree-plots in Python

How to make interactive tree-plot in Python with Plotly. An examples of a tree-plot in Plotly.

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Set Up Tree with [igraph](http://igraph.org/python/) (http://igraph.org/python/).

Install igraph with pip install igraph.

```
!pip install igraph
```

```
Collecting igraph
  Downloading igraph-0.11.9-cp39-abi3-manylinux_2_17_x86_64.manylinux2014_x86_64.whl.metadata (4.4 kB)
Collecting texttable>=1.6.2 (from igraph)
  Downloading texttable-1.7.0-py2.py3-none-any.whl.metadata (9.8 kB)
Downloaded igraph-0.11.9-cp39-abi3-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (4.4 MB)
----- 4.4/4.4 MB 92.0 MB/s eta 0:00:00
Downloaded texttable-1.7.0-py2.py3-none-any.whl (10 kB)
Installing collected packages: texttable, igraph
----- 2/2 [igraph]
Successfully installed igraph-0.11.9 texttable-1.7.0
```

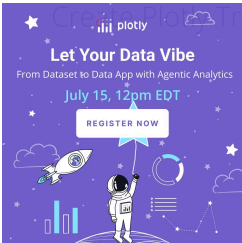
```
import igraph
from igraph import Graph, EdgeSeq
nr_vertices = 25
v_label = list(map(str, range(nr_vertices)))
G = Graph.Tree(nr_vertices, 2) # 2 stands for children number
lay = G.layout('rt')

position = {k: lay[k] for k in range(nr_vertices)}
Y = [lay[k][1] for k in range(nr_vertices)]
M = max(Y)

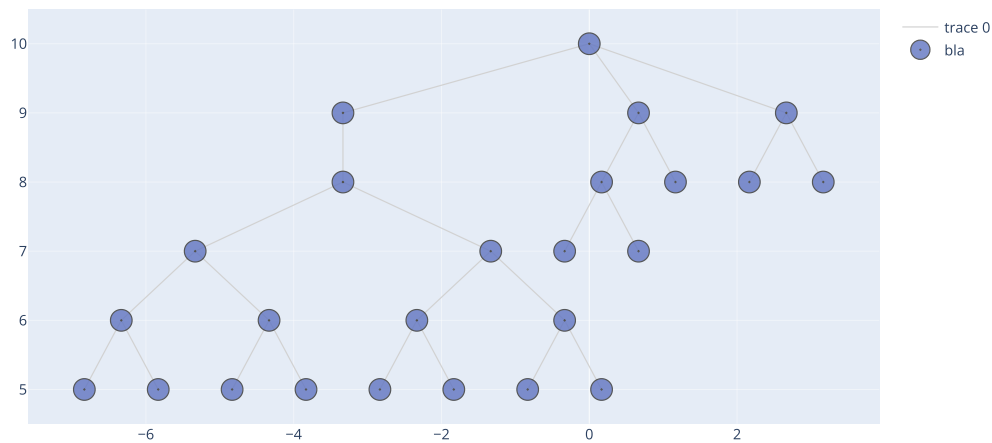
es = EdgeSeq(G) # sequence of edges
E = [e.tuple for e in G.es] # list of edges

L = len(position)
Xn = [position[k][0] for k in range(L)]
Yn = [2*M-position[k][1] for k in range(L)]
Xe = []
Ye = []
for edge in E:
    Xe+=[position[edge[0]][0],position[edge[1]][0], None]
    Ye+=[2*M-position[edge[0]][1],2*M-position[edge[1]][1], None]

labels = v_label
```



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Create Text Inside the Circle via Annotations

```
def make_annotations(pos, text, font_size=10, font_color='rgb(250,250,250)'):
    L=len(pos)
    if len(text)!=L:
        raise ValueError('The lists pos and text must have the same len')
    annotations = []
    for k in range(L):
        annotations.append(
            dict(
                text=labels[k], # or replace labels with a different list for the text within the circle
                x=pos[k][0], y=2*M-position[k][1],
                xref='x1', yref='y1',
                font=dict(color=font_color, size=font_size),
                showarrow=False)
        )
    return annotations
```



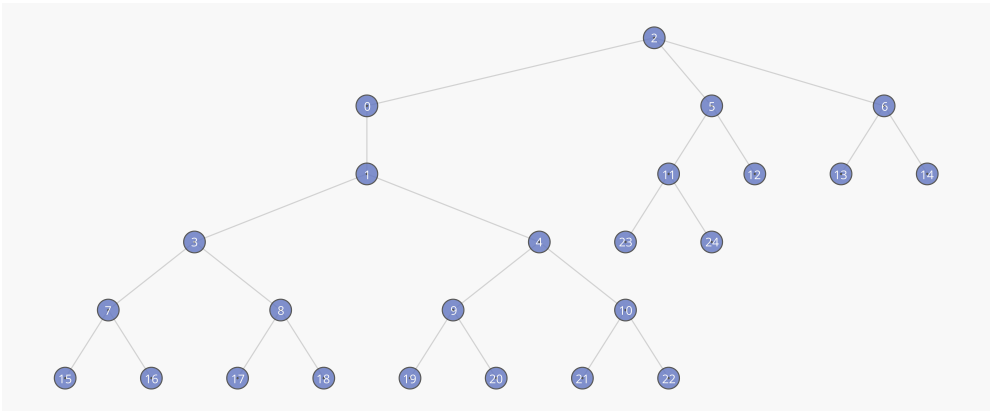
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```
axis = dict(showline=False, # hide axis line, grid, tickLabels and title
            zeroline=False,
            showgrid=False,
            showticklabels=False,
            )

fig.update_layout(title= 'Tree with Reingold-Tilford Layout',
                  annotations=make_annotations(position, v_label),
                  font_size=12,
                  showlegend=False,
                  xaxis=axis,
                  yaxis=axis,
                  margin=dict(l=40, r=40, b=85, t=100),
                  hovermode='closest',
                  plot_bgcolor='rgb(248,248,248)'
                  )

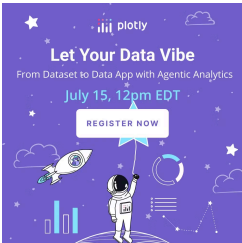
fig.show()
```

Tree with Reingold-Tilford Layout



Reference

See <https://plotly.com/python/reference/> (https://plotly.com/python/reference/) for more information and chart attribute options and <http://igraph.org/python/> (http://igraph.org/python/) for more information about the igraph package!



What About Dash?

Dash (<https://dash.plot.ly/>) is an open-source framework for building analytical applications, with no Javascript required, and it is tightly integrated with the Plotly graphing library.

Learn about how to install Dash at <https://dash.plot.ly/installation> (<https://dash.plot.ly/installation>).

Everywhere in this page that you see `fig.show()`, you can display the same figure in a Dash application by passing it to the `figure` argument of the `Graph` component (<https://dash.plot.ly/dash-core-components/graph>) from the built-in `dash_core_components` package like this:

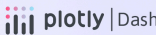
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```
import plotly.graph_objects as go # or plotly.express as px
fig = go.Figure() # or any Plotly Express function e.g. px.bar(...)
# fig.add_trace( ... )
# fig.update_layout( ... )

from dash import Dash, dcc, html

app = Dash()
app.layout = html.Div([
    dcc.Graph(figure=fig)
])

app.run(debug=True, use_reloader=False) # Turn off reloader if inside Jupyter
```



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lifeExp

gdpPerCap

country	pop	continent	lifeExp	gdpPerCap
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Albania	3600523	Europe	76.423	5937.829525999999
Algeria	33333216	Africa	72.381	6223.367465
Angola	12420476	Africa	42.731	4707.231267
Argentina	40301927	Americas	75.32	12779.37964
Australia	20434176	Oceania	81.235	34435.367439999995
Austria	8199783	Europe	79.829	36126.4927
Bahrain	706573	Asia	75.635	29796.04834
Bangladesh	150448339	Asia	64.062	1701.253792
Belgium	10391226	Europe	79.441	33062.04908
Benin	8878314	Africa	56.728	1441.284873
Bolivia	9139152	Americas	65.554	3821.137884



(https://dash.plotly.com/tutorial?utm_medium=graphing_libraries&utm_content=python_footer)

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