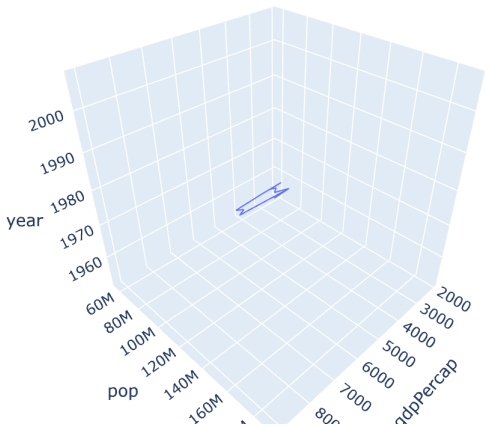
3D Line Plots in Python

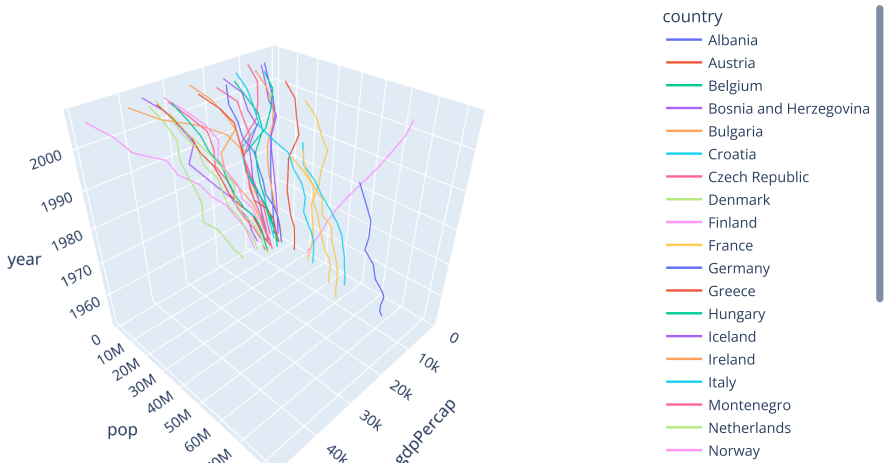
How to make 3D Line Plots

3D Line plot with Plotly Express

```
import plotly.express as px
df = px.data.gapminder().query("country=='Brazil'")
fig = px.line_3d(df, x="gdpPercap", y="pop", z="year")
fig.show()
```



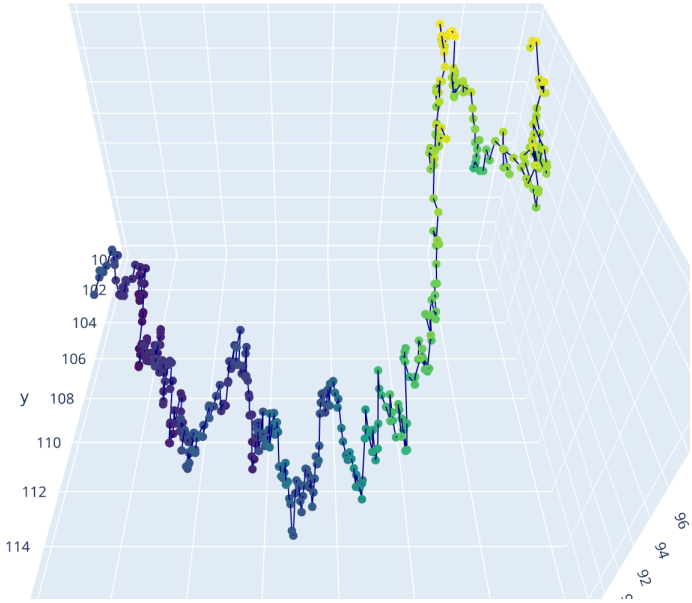
```
import plotly.express as px
df = px.data.gapminder().query("continent=='Europe'")
fig = px.line_3d(df, x="gdpPercap", y="pop", z="year", color='country')
fig.show()
```



3D Line Plot of Brownian Motion

Here we represent a trajectory in 3D.

```
import plotly.graph_objects as go
import pandas as pd
import numpy as np

rs = np.random.RandomState()
rs.seed(0)

def brownian_motion(T = 1, N = 100, mu = 0.1, sigma = 0.01, S0 = 20):
    dt = float(T)/N
    t = np.linspace(0, T, N)
    W = rs.standard_normal(size = N)
    W = np.cumsum(W)*np.sqrt(dt) # standard brownian motion
    X = (mu-0.5*sigma**2)*t + sigma*W
    S = S0*np.exp(X) # geometric brownian motion
    return S

dates = pd.date_range('2012-01-01', '2013-02-22')
T = (dates.max()-dates.min()).days / 365
N = dates.size
start_price = 100
y = brownian_motion(T, N, sigma=0.1, S0=start_price)
z = brownian_motion(T, N, sigma=0.1, S0=start_price)

fig = go.Figure(data=go.Scatter3d(
    x=dates, y=y, z=z,
    marker=dict(
        size=4,
        color=z,
        colorscale='Viridis',
    ),
    line=dict(
        color='darkblue',
        width=2
    )
))

fig.update_layout(
    width=800,
    height=700,
    autosize=False,
    scene=dict(
        camera=dict(
            up=dict(
                x=0,
                y=0,
                z=1
            ),
            eye=dict(
                x=0,
                y=1.0707,
                z=1,
            )
        ),
        aspectratio = dict( x=1, y=1, z=0.7 ),
        aspectmode = 'manual'
    ),
)

fig.show()
```



Reference

See function reference for px.(line_3d) (https://plotly.com/python-api-reference/generated/plotly.express.line_3d) or https://plotly.com/python/reference/scatter3d/#scatter3d-marker-line (https://plotly.com/python/reference/scatter3d/#scatter3d-marker-line) for more information and chart attribute options!

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:

```
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
```

JOIN OUR MAILING LIST

Sign up to stay in the loop with all things Plotly — from Dash Club to product updates, webinars, and more!

SUBSCRIBE (HTTPS://GO.PLOT.LY/SUBSCRIPTION)

Products

Dash (https://plotly.com/dash/)
Consulting and Training (https://plotly.com/consulting-and-oem/)

Pricing

Enterprise Pricing (https://plotly.com/get-pricing/)

About Us

Careers (https://plotly.com/careers)
Resources (https://plotly.com/resources/)
Blog (https://medium.com/@plotlygraphs)

Support

Community Support (https://community.plot.ly/)
Documentation (https://plotly.com/graphing-libraries)

Terms of Service (https://community.plotly.com/tos) Privacy Policy (https://plotly.com/privacy/)