3D_Rotatable_SVM_plot _G7 (1)

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[3]:
```
import pandas as pd
import numpy as np
from matplotlib.animation import FuncAnimation
from IPython.display import HTML
import matplotlib.pyplot as plt
from mpl_toolkits.mplot3d import Axes3D
import plotly.graph_objects as go
import plotly.io as pio

# Generate data
np.random.seed(0)
x1 = np.random.uniform(-2, 2, 100)
x2 = np.random.uniform(-2, 2, 100)
y = np.where(x2 > -0.5 * x1**2 + 1, 1, 0)

# Transformation function
def transform(x1, x2):
    z1 = x1**2
    z2 = np.sqrt(2) * x1 * x2
    z3 = x2**2
    return z1, z2, z3

z1, z2, z3 = transform(x1, x2)

fig = go.Figure(data=[go.Scatter3d(
    x=z1,
    y=z2,
    z=z3,
    mode='markers',
    marker=dict(
        size=12,  # Increased marker size
        color=y,
        colorscale='Plasma',  # Changed colorscale
        opacity=0.9,  # Increased opacity
        line=dict(width=1, color='DarkSlateGrey')  # Added border
    )
)])
```

```
fig.update_layout(
    title='3D Data Transformation (Interactive View)',
    scene=dict(
        xaxis_title='z1 = x1²',
        yaxis_title='z2 = √2·x1·x2',
        zaxis_title='z3 = x2²',
        xaxis=dict(gridcolor='rgb(200, 200, 200)'),
        yaxis=dict(gridcolor='rgb(200, 200, 200)'),
        zaxis=dict(gridcolor='rgb(200, 200, 200)'),
        bgcolor='rgb(245, 245, 245)'  # Light gray background
    ),
    width=1400,  # Increased width
    height=1000,  # Increased height
    margin=dict(l=50, r=50, b=50, t=50),  # Adjusted margins
    paper_bgcolor='white'  # White paper background
)

pio.write_html(fig, file='interactive_3D_plot.html', auto_open=True)
pio.offline.plot(fig, filename = 'Group7_sVM_GIF.html', auto_open = True, image␣
 ↪= 'png')
```

```
---------------------------------------------------------------------------
AttributeError                            Traceback (most recent call last)
Cell In[3], line 57
     39 fig.update_layout(
     40     title='3D Data Transformation (Interactive View)',
     41     scene=dict(
   (…)
     53     paper_bgcolor='white'  # White paper background
     54 )
     56 pio.write_html(fig, file='interactive_3D_plot.html', auto_open=True)
---> 57 pio.offline.plot(fig, filename = 'Group7_sVM_GIF.html', auto_open =␣
 ↪True, image = 'png')

File C:\ProgramData\anaconda3\Lib\site-packages\_plotly_utils\importers.py:39,␣
 ↪in relative_import.<locals>.__getattr__(import_name)
     36     class_module = importlib.import_module(rel_module, parent_name)
     37     return getattr(class_module, class_name)
---> 39 raise AttributeError(
     40     "module {__name__!r} has no attribute {name!r}".format(
     41         name=import_name, __name__=parent_name
     42     )
     43 )

AttributeError: module 'plotly.io' has no attribute 'offline'
```

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