3-D Graphs

Language Used :- python 3

Source code:-

**from** mpl\_toolkits **import** mplot3d

<pre id**=**"3346" **class=**"graf graf--pre graf-after--p">**%**matplotlib inline

**import** numpy as np

**import** matplotlib.pyplot as plt

fig **=** plt.figure()

ax **=** plt.axes(projection**=**’3d’)<**/**pre>

ax **=** plt.axes(projection**=**’3d’)# Data for a three-dimensional line

zline **=** np.linspace(0, 15, 1000)

xline **=** np.sin(zline)

yline **=** np.cos(zline)

ax.plot3D(xline, yline, zline, ‘gray’)# Data for three-dimensional scattered points

zdata **=** 15 **\*** np.random.random(100)

xdata **=** np.sin(zdata) **+** 0.1 **\*** np.random.randn(100)

ydata **=** np.cos(zdata) **+** 0.1 **\*** np.random.randn(100)

ax.scatter3D(xdata, ydata, zdata, c**=**zdata, cmap**=**’Greens’);

**def** f(x, y):

**return** np.sin(np.sqrt(x **\*\*** 2 **+** y **\*\*** 2))

x **=** np.linspace(**-**6, 6, 30)

y **=** np.linspace(**-**6, 6, 30)

X, Y **=** np.meshgrid(x, y)

Z **=** f(X, Y)fig **=** plt.figure()

ax **=** plt.axes(projection**=**'3d')

ax.contour3D(X, Y, Z, 50, cmap**=**'binary')

ax.set\_xlabel('x')

ax.set\_ylabel('y')

ax.set\_zlabel('z');

theta **=** 2 **\*** np.pi **\*** np.random.random(1000)

r **=** 6 **\*** np.random.random(1000)

x **=** np.ravel(r **\*** np.sin(theta))

y **=** np.ravel(r **\*** np.cos(theta))

z **=** f(x, y)

ax **=** plt.axes(projection**=**’3d’)

ax.plot\_trisurf(x, y, z,cmap**=**’viridis’, edgecolor**=**’none’);