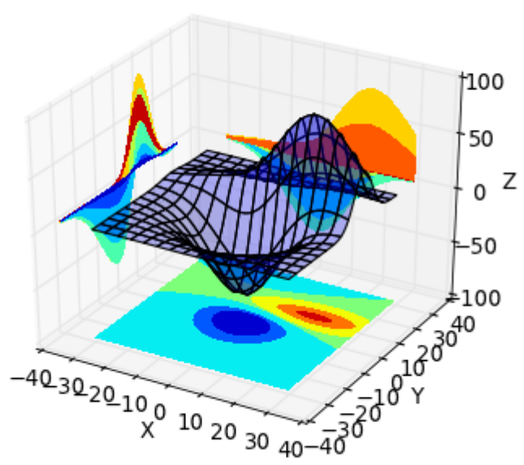
Matplotlib: imshow in 3d plot

In the plot below, taken from matplotlib's gallery, contourf is used to create a 2d plot beneath the 3d one. My question is, is it possible to use imshow to do the same thing? I would like the colors in the 2d plot to be smoother.

Making the 2d plot seems to be possible because contourf accepts a zdir argument, while I've looked and imshow doesn't. That suggests that it isn't possible, but why not? pcolor would also get the job done, is it possible with that?



python 3d plot matplotlib

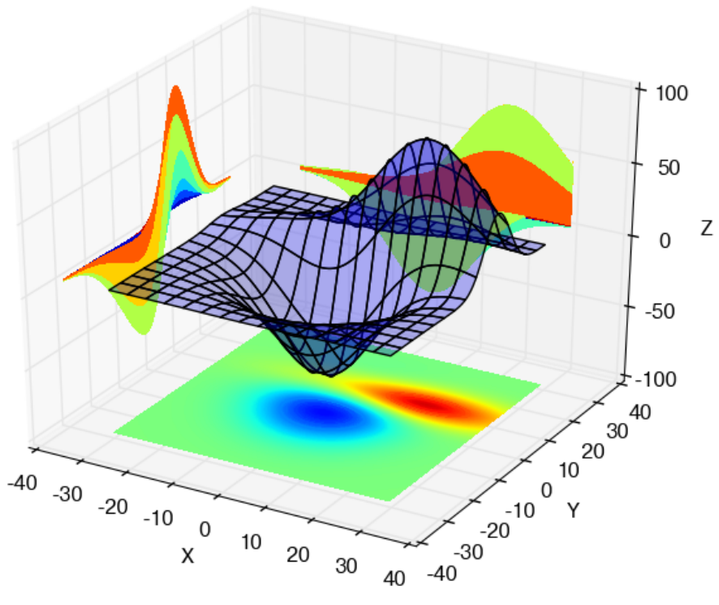
edited Jun 7 '12 at 23:42
sega_sai
4,553 15 33

asked Jun 6 '12 at 15:37
user791208

2 Answers

Just specify the levels= option for the contourf, e.g.

```
from mpl_toolkits.mplot3d import axes3d
import matplotlib.pyplot as plt,numpy as np
plt.clf()
fig = plt.figure(1)
ax = fig.gca(projection='3d')
X, Y, Z = axes3d.get_test_data(0.05)
ax.plot_surface(X, Y, Z, rstride=8, cstride=8, alpha=0.3)
cset = ax.contourf(X, Y, Z, zdir='z', offset=-100,
        levels=np.linspace(-100,100,1200),cmap=plt.cm.jet)
cset = ax.contourf(X, Y, Z, zdir='x', offset=-40, cmap=plt.cm.jet)
cset = ax.contourf(X, Y, Z, zdir='y', offset=40, cmap=plt.cm.jet)
ax.set_xlabel('X')
ax.set_xlim(-40, 40)
ax.set_ylabel('Y')
ax.set_ylim(-40, 40)
ax.set_zlabel('Z')
ax.set_zlim(-100, 100)
plt.show()
```



answered Jun 6 '12 at 18:10
sega_sai
4,553 15 33

Excellent, thank you. – user791208 Jun 6 '12 at 18:40

2 This means that there are over 1200 surfaces drawn in order to approximate the image? It's hard being a vector backend these days :D – pwuertz Jul 4 '12 at 21:59

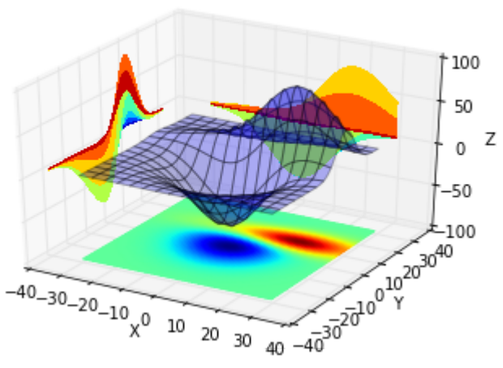
A little longer code then sega_sai's answer but faster and to my experience much better for more complex surfaces.

Use plot_surface to plot a flat surface where you want it and facecolors to color it with the values you want

You might need to make your data smoother with scipy's zoom

```
from mpl_toolkits.mplot3d import axes3d
import matplotlib.pyplot as plt,numpy as np
plt.clf()
fig = plt.figure(1)
ax = fig.gca(projection='3d')
X, Y, Z = axes3d.get_test_data(0.05)
```

```
    ax.plot_surface(X, Y, Z, rstride=8, cstride=8, alpha=0.3)
    cset = ax.contourf(X, Y, Z, zdir='x', offset=-40, cmap=plt.cm.jet)
    cset = ax.contourf(X, Y, Z, zdir='y', offset=40, cmap=plt.cm.jet)

    ### strating here:

    # normalize Z to [0..1]
    Z=Z-Z.min()
    Z=Z/Z.max()

    #use zoom to make your data smoother
    from scipy.ndimage.interpolation import zoom

    #make data 5 times smoother
    X=zoom(X,5)
    Y=zoom(Y,5)
    Z=zoom(Z,5)

    #draw a surface at -100, using the facecolors command to color it with the values of Z
    cset = ax.plot_surface(X, Y, np.zeros_like(Z)-100,facecolors=plt.cm.jet(Z),shade=False)


    ax.set_xlabel('X')
    ax.set_xlim(-40, 40)
    ax.set_ylabel('Y')
    ax.set_ylim(-40, 40)
    ax.set_zlabel('Z')
    ax.set_zlim(-100, 100)
    plt.show()
```



This also makes it a little harder to create a color bar, in order to that:

```
cb = plt.cm.ScalarMappable(cmap=plt.cm.jet)
cb.set_array(Z)
plt.colorbar(cb)
plt.show()
```

edited Oct 12 '15 at 18:25

answered Oct 12 '15 at 18:10

user4421975

688 4 13