Hu moments

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In [3]: from hu import hu_moments

        img = np.array(Image.open('../images/fig1137-original.tif').convert('L'))
        img2 = np.array(Image.open('../images/fig1137-45.tif').convert('L'))
        img3 = np.array(Image.open('../images/fig1137-mirror.tif').convert('L'))
        img4 = np.array(Image.open('../images/fig1137-halfpadded.tif').convert('L'))
        img5 = np.array(Image.open('../images/fig1137-padded.tif').convert('L'))
        img6 = np.array(Image.open('../images/fig1137-90.tif').convert('L'))

        m, eta, phi = hu_moments(img)
        m2, eta2, phi2 = hu_moments(img2)
        m3, eta3, phi3 = hu_moments(img3)
        m4, eta4, phi4 = hu_moments(img4)
        m5, eta5, phi5 = hu_moments(img5)
        m6, eta6, phi6 = hu_moments(img6)
        ax = plt.subplot('231')
        ax.set_title("Original image")
        ax.imshow(img, 'gray')
        ax.axis('off')


        ax = plt.subplot('232')
        ax.set_title("Rotated 45")
        ax.imshow(img2, 'gray')
        ax.axis('off')

        ax = plt.subplot('233')
        ax.set_title("Mirrored")
        ax.imshow(img3, 'gray')
        ax.axis('off')

        ax = plt.subplot('234')
        ax.set_title("Half padded")
        ax.imshow(img4, 'gray')
        ax.axis('off')

        ax = plt.subplot('235')
        ax.set_title("Padded")
        ax.imshow(img5, 'gray')
        ax.axis('off')

        ax = plt.subplot('236')
        ax.set_title("Rotated 90")
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```python
ax.imshow(img6, 'gray')
ax.axis('off')

plt.show()

print 'Original image\n %.4g %.4g %.4g %.4g %.4g %.4g %.4g' % \
    (phi['1'], float(phi['2']), phi['3'],
     phi['4'], phi['5'], phi['6'], phi['7'])

print 'Rotated 45\n %.4g %.4g %.4g %.4g %.4g %.4g %.4g' % \
    (phi2['1'], phi2['2'], phi2['3'], phi2[
     '4'], phi2['5'], phi2['6'], phi2['7'])

print 'Mirrored\n %.4g %.4g %.4g %.4g %.4g %.4g %.4g' % \
    (phi3['1'], phi3['2'], phi3['3'], phi3[
     '4'], phi3['5'], phi3['6'], phi3['7'])

print 'Half padded\n %.4g %.4g %.4g %.4g %.4g %.4g %.4g' % \
    (phi4['1'], phi4['2'], phi4['3'], phi4[
     '4'], phi4['5'], phi4['6'], phi4['7'])

print 'Padded\n %.4g %.4g %.4g %.4g %.4g %.4g %.4g' % \
    (phi5['1'], phi5['2'], phi5['3'], phi5[
     '4'], phi5['5'], phi5['6'], phi5['7'])

print 'Rotated 90\n %.4g %.4g %.4g %.4g %.4g %.4g %.4g' % \
    (phi6['1'], phi6['2'], phi6['3'], phi6[
     '4'], phi6['5'], phi6['6'], phi6['7'])
```
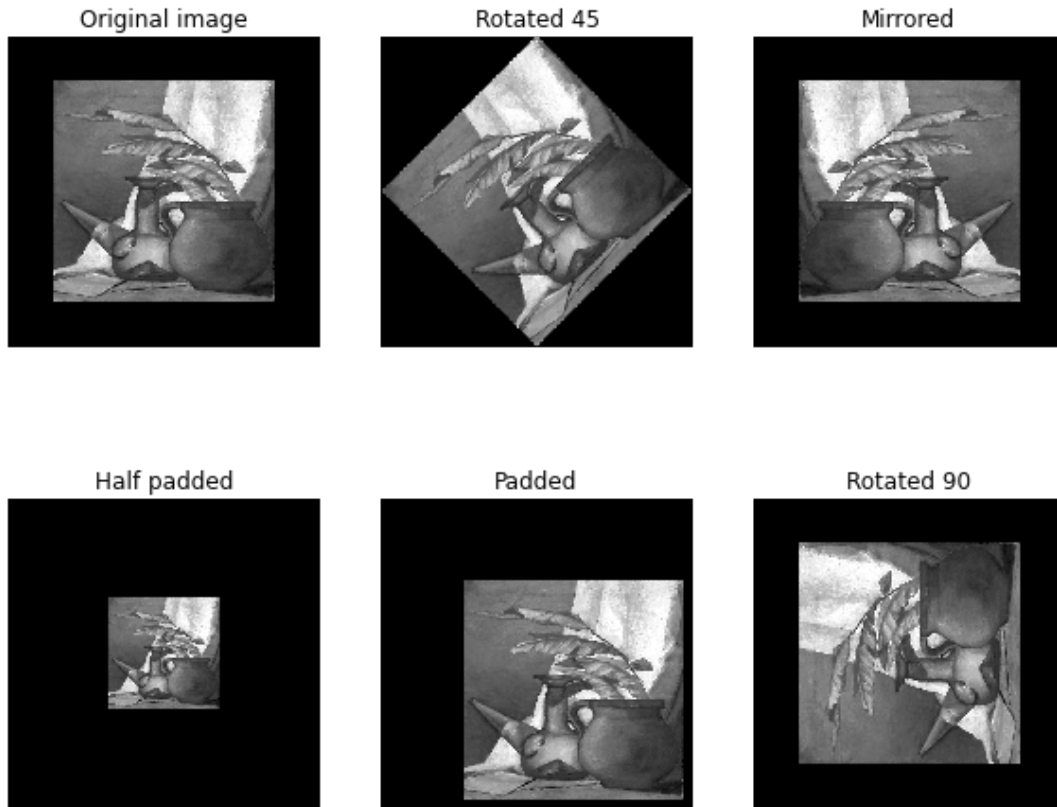
Original image
 0.001361 7.472e-08 3.882e-11 4.224e-11 4.292e-22 1.144e-14 -1.656e-21
Rotated 45
 0.001361 7.471e-08 3.877e-11 4.225e-11 4.302e-22 1.144e-14 -1.655e-21
Mirrored
 0.001361 7.472e-08 3.882e-11 4.224e-11 4.292e-22 1.144e-14 1.656e-21
Half padded
 0.00136 7.487e-08 3.938e-11 4.247e-11 4.052e-22 1.153e-14 -1.689e-21
Padded
 0.001361 7.472e-08 3.882e-11 4.224e-11 4.292e-22 1.144e-14 -1.656e-21
Rotated 90
 0.001361 7.472e-08 3.882e-11 4.224e-11 4.292e-22 1.144e-14 -1.656e-21