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1 from PIL import Image
2 import numpy as np
3 import matplotlib.pyplot as plt
4
5 im = Image.open("Lenna.jpg").resize((255,255))
6 arr = np.array(im.copy())
7 arrEq = np.zeros(arr.shape, dtype= np.uint8)
8
9 keys = np.arange(256)
10 histOri = np.zeros((256), dtype= np.uint32)
11 histEq = np.zeros((256), dtype= np.uint32)
12
13 minI = 30
14 maxI = 240
15 min0 = 0
16 max0 = 255
17 for y in range(arr.shape[0]):
18     for x in range(arr.shape[1]):
19         akum = (int(arr[y,x,0])+int(arr[y,x,1])+int(arr[y,x,2]))
20         tmp = max(min(int(akum/3),255),0)
21         arr[y,x] = [tmp,tmp,tmp]
22         histOri[tmp] = histOri[tmp]+1;
23         tmpEq = np.floor((tmp-minI)*(((max0-min0)/(maxI-minI))+min0)).astype(np.uint8)
24         tmp = max(min(tmpEq,255),0)
25         arrEq[y,x] = [tmpEq,tmpEq,tmpEq]
26         histEq[tmpEq] = histEq[tmpEq]+1;
27
28
29 fig = plt.figure(1)
30 plt.bar(keys,histOri)
31 fig.canvas.draw()
32 dataOri = np.frombuffer(fig.canvas.tostring_rgb(), dtype=np.uint8)
33 dataOri = dataOri.reshape(fig.canvas.get_width_height()[::-1] + (3,))
34 histImageOri = Image.fromarray(dataOri).resize((255,255))
35 histNpOri = np.array(histImageOri)
36
37 fig = plt.figure(2)
38 plt.bar(keys,histEq)
39 fig.canvas.draw()
40 dataEq = np.frombuffer(fig.canvas.tostring_rgb(), dtype=np.uint8)
41 dataEq = dataEq.reshape(fig.canvas.get_width_height()[::-1] + (3,))
42 histImageEq = Image.fromarray(dataEq).resize((255,255))
43 histNpEq = np.array(histImageEq)
44
45 Image.fromarray(np.hstack((np.vstack((histNpOri,arr)),np.vstack((histNpEq,arrEq)))).show()

```