Computer Vision HW3

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Language: Python3

Description: I use OpenCV to do image I/O, and load raw pixel data (height , length , channels) from lena.bmp.

Run: python hw3.py

演算法參考講義 slides 後面提供的方法找出每個亮度對應的 equalization 亮度，並存在 Sk array，再根據每個 pixel 的亮度從 Sk 找到對應值後寫入新的圖片

```
Sk = np.zeros(256)
nj = np.zeros(256)
Sk[0] = 255*histogram[0]/total_pixel
nj[0] = histogram[0]
for i in range(1,256):
    nj[i] = nj[i-1] + histogram[i]
    Sk[i]= int(255*nj[i]/total_pixel)

equalization = np.zeros([height , width , channels])
for i in range(height):
    for j in range(width):
        bright = Sk[lena[i , j , 0]]
        equalization[i , j] = [bright , bright , bright]

histogram_equalization = np.zeros(256)

for i in range(height):
    for j in range(width):
        bright = int(equalization[i , j , 0])
        histogram_equalization[bright] += 1
```

左圖為 equalization 後結果，可以看出亮度對比變明顯