Computer Vision HW3

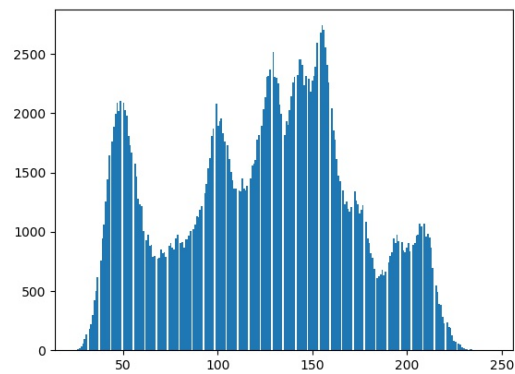姓名:胡嘉祐 學號: r07922162 系級：資工碩一

1. Result

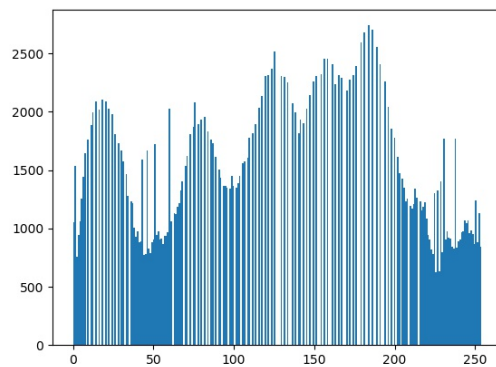Original :lena.bmp   Histogram:

After histogram equalization   Histogram

2. Principle code and algorithm
使用的方法為 ppt cv1_ch3 (p67) 的方法
語言：python，
套件   opencv：讀檔
        matplotlib: histogram 繪圖

3. Code 截圖：

Main :

```python
#create threshold 128 image
img = cv2.imread('lena.bmp')
Histogram= []
H_list = []
for i  in range (0,256):
    H_list.append(0)
x= [[0 for j in range(len(img[0]))] for i in range(len(img))]
for i in range (0,512):
    for j in range (0,512):
        H_list[img[i][j][0]]+=1
        Histogram.append(img[i][j][0])
```

```python
#create
he = histogram_equalization(H_list)

histogram_e = []
he_list=[]
for i in range (256):
    he_list.append(0)
for i in range  (0,512):
    for j in range (0,512):
        img[i][j]=he[int(img[i][j][0])]
for i in range  (0,512):
    for j in range (0,512):
        he_list[int(img[i][j][0])]+=1
        histogram_e.append(int(img[i][j][0]))


cv2.imwrite("lena_he.jpg",img)

plt.hist(histogram_e,bins=256)

plt.savefig("hist_equl.jpg")
plt.clf()
plt.hist(Histogram,bins=256)
plt.savefig("hist.jpg")
```

Histogram_equalization:

```python
def histogram_equalization (histogram):
    he =[]
    s = []
    for i in range (256):
        he.append(0)
        s.append(0)
    for i in range (256):
        for j in range (i):
            he[i]+=histogram[j]
        s[i]=255*he[i]/(512*512)
    return s
```