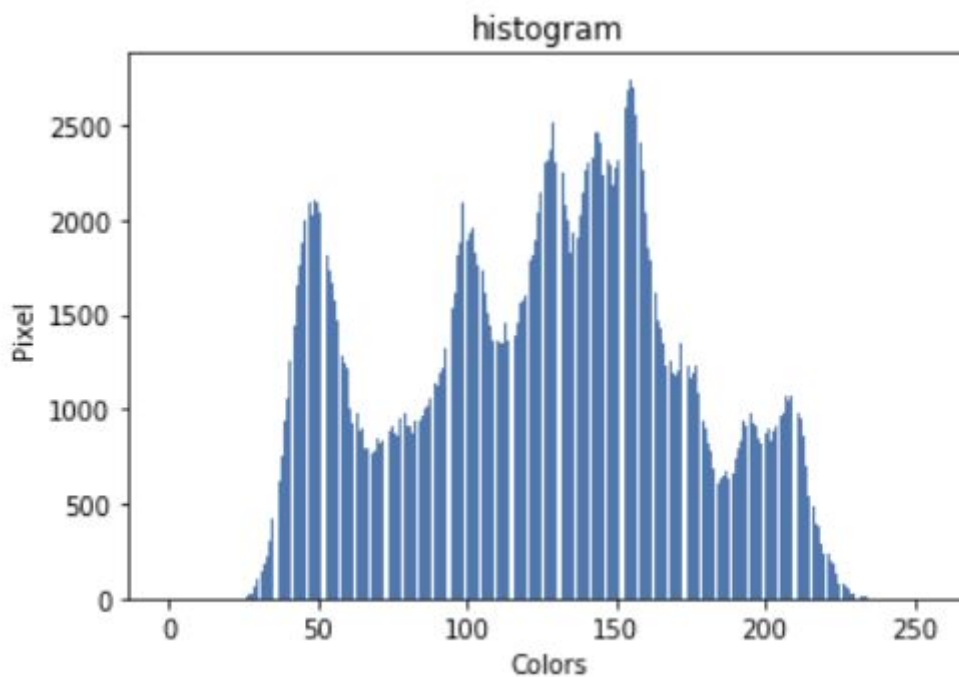
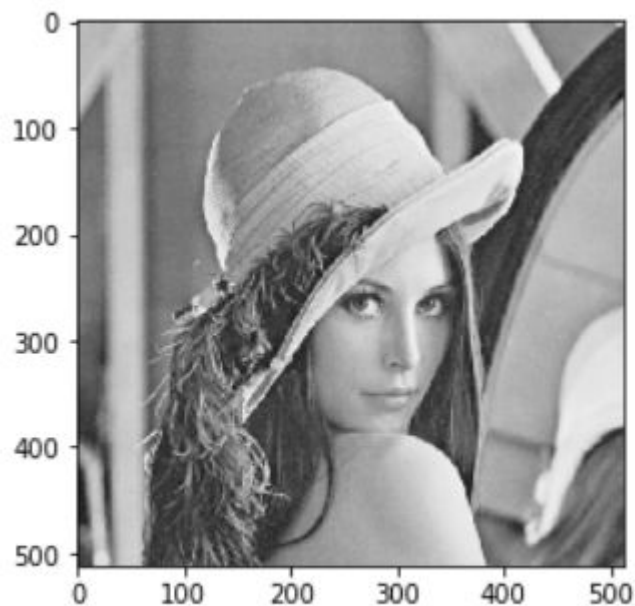


Computer Vision Homework3 report

R08922143 賴振東

(a) original image and its histogram

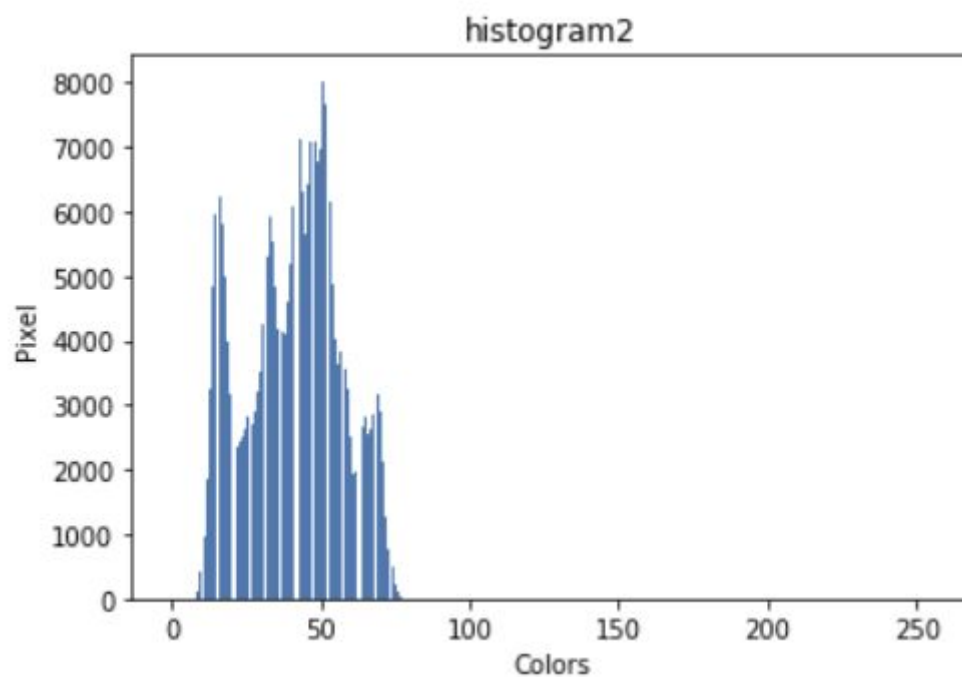
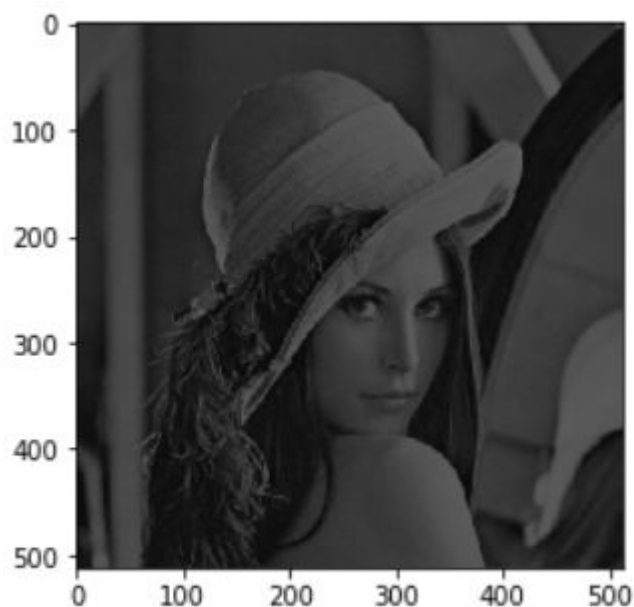
建立一個大小為256的Array紀錄各灰階值出現的次數，並用 `pyplot.bar` 繪製直方圖，縱軸為 pixel 數，橫軸為灰階值。



(b) image with intensity divided by 3 and its histogram

將各點的灰階值除以 3 後四捨五入至整數，然後繪製新的 histogram。

```
for i in range(len(img2)):  
    for j in range(len(img2[0])):  
        img2[i][j] = int(img2[i][j]/3)  
        histogram2[img2[i][j]] += 1
```



(c) Image after applying histogram equalization to (b) and its histogram

利用 ppt 中的公式作 histogram equalization, 在實作上立先計算 $cdf(k) =$ 灰階值 $0 \sim k$ 的累積函數, 避免算 n_j 不必要的重複計算。

I histogram equalization histogram linearization

$$s_k = 255 \sum_{j=0}^k \frac{n_j}{n}$$

