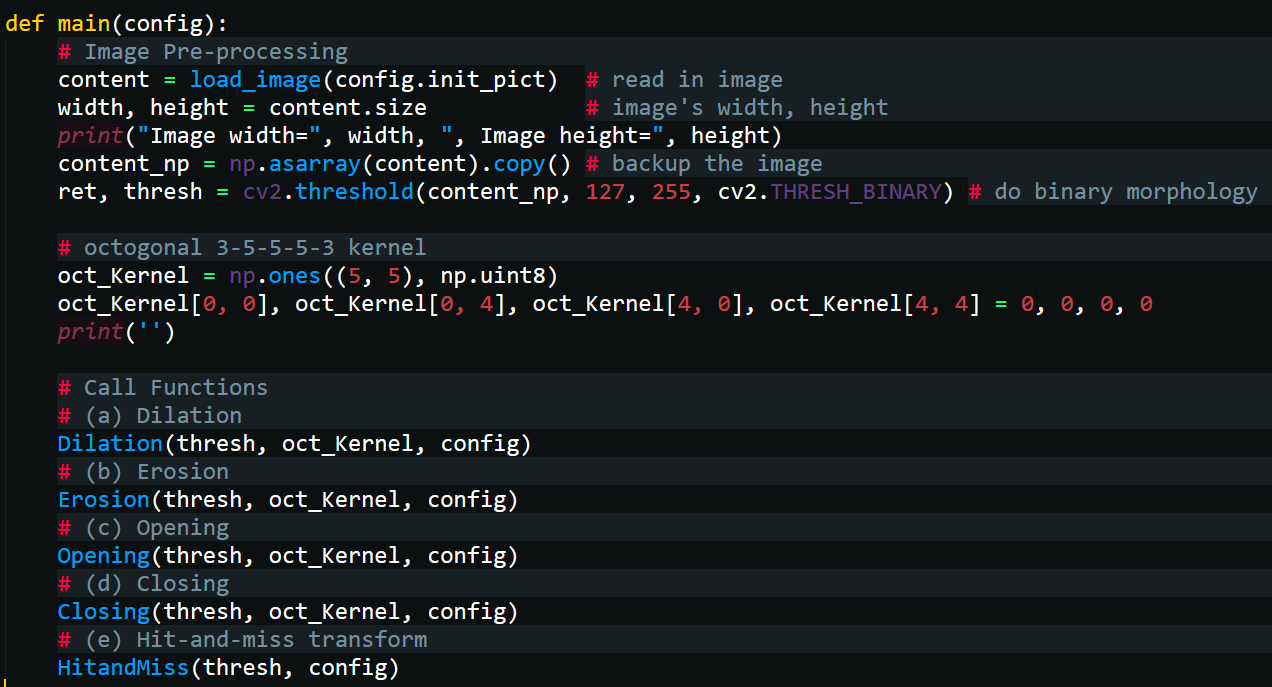
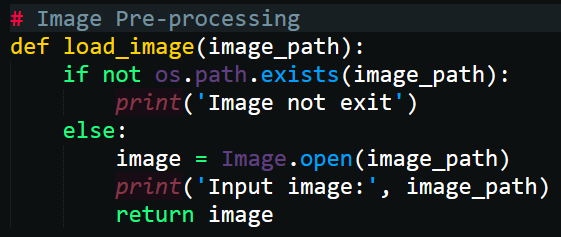
[Computer Vision I] Homework 4

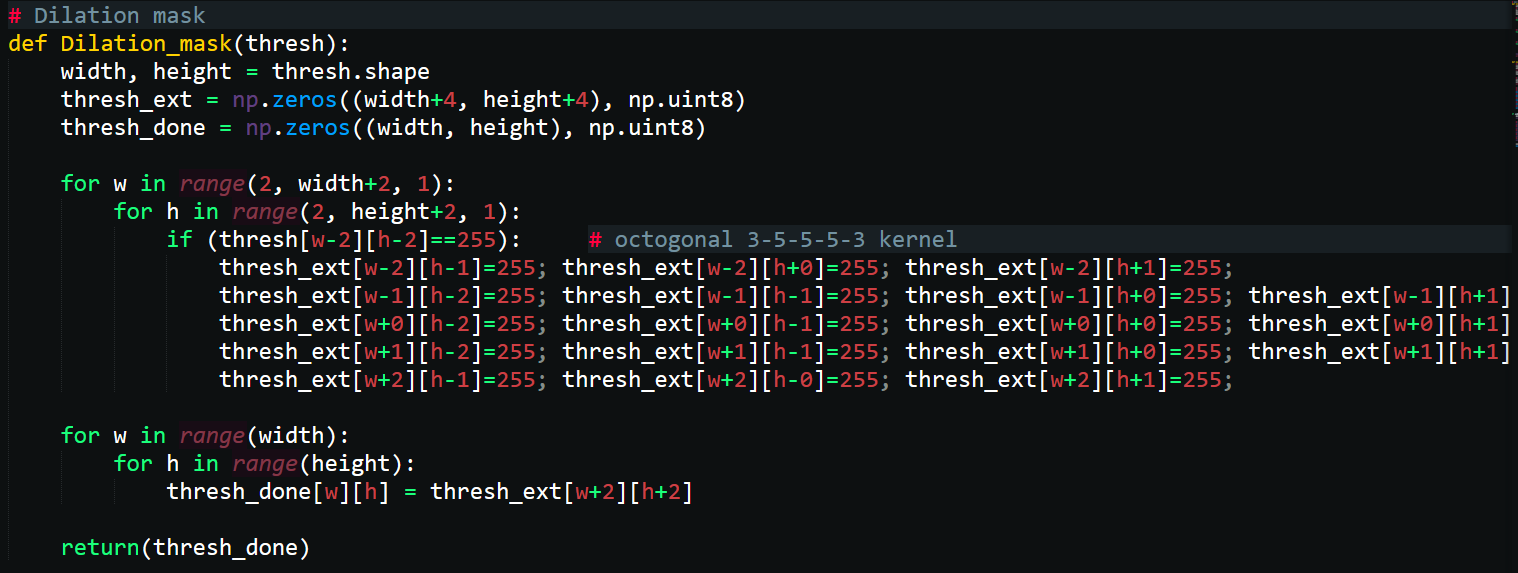
學號: R07943087姓名: 林啟源

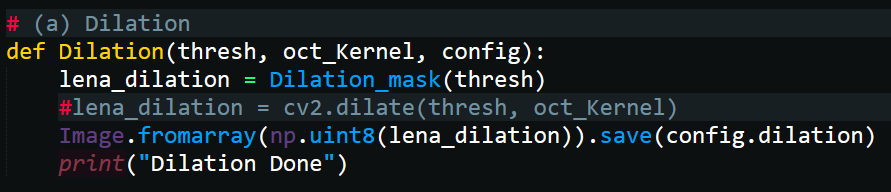
**Write a program to generate images and histograms:**

****

****

1. **Dilation**



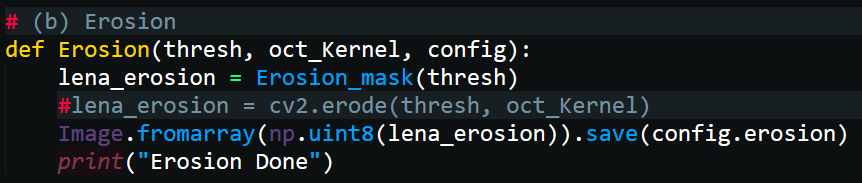


* def Dilation(thresh, oct\_Kernel, config) call function “Dilation\_mask()”
* “Dilation\_mask()”使用2個for loop掃描比對filter和binary圖片，並將if判斷後的結果儲存於”thresh\_done” np array
* if (thresh[w-2][h-2]==255)，只要目標pixel=255，便會將周圍的pixel數值依照filter圖形更改為255
* thresh\_ext = np.zeros((width+4, height+4), np.uint8)會是516 \* 516大小np array，經過處理會刪除多餘的邊緣，並儲存於”thresh\_done” np array (shape=512\*512)



1. **Erosion**

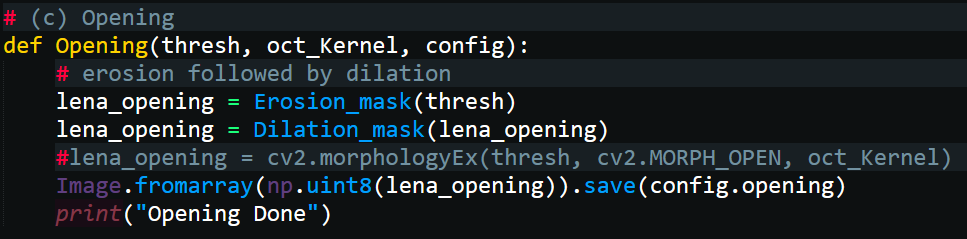




* def Erosion (thresh, oct\_Kernel, config) call function “Erosion\_mask ()”
* “Erosion\_mask ()”使用2個for loop掃描比對filter和binary圖片，並將if判斷後的結果儲存於”thresh\_done” np array
* If條件必須要filter覆蓋範圍的pixel值都為255，才會將中心pixel值保留為255
* thresh\_ext = np.zeros((width+4, height+4), np.uint8)會是516 \* 516大小np array，經過處理會刪除多餘的邊緣，並儲存於”thresh\_done” np array (shape=512\*512)



1. **Opening**

****

* erosion followed by dilation:

lena\_opening = Erosion\_mask(thresh)

lena\_opening = Dilation\_mask(lena\_opening)

* #lena\_opening = cv2.morphologyEx(thresh, cv2.MORPH\_OPEN, oct\_Kernel)

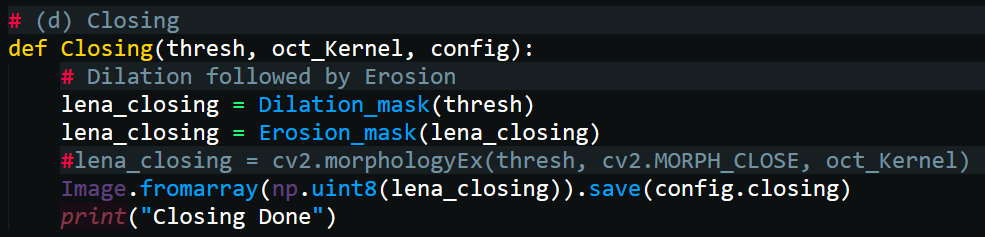
使用cv2函數直接產生Opening結果

* Image.fromarray(np.uint8(lena\_opening)).save(config.opening)

儲存圖片



1. **Closing**

****

* Dilation followed by Erosion:

lena\_closing = Dilation\_mask(thresh)

lena\_closing = Erosion\_mask(lena\_closing)

* #lena\_closing = cv2.morphologyEx(thresh, cv2.MORPH\_CLOSE, oct\_Kernel)

使用cv2函數直接產生Closing結果

* Image.fromarray(np.uint8(lena\_closing)).save(config.closing)

儲存圖片



1. **Hit-and-miss transform**

****

* Use 2 for loop算出A和J的intersection of erosions，A\_J[i][j]

Use 2 for loop算出inv A和K的intersection of erosions，invA\_K[i][j]

Use 2 for loop算出A\_J[i][j]和invA\_K[i][j]的intersection of erosions，HandM[i][j]

* Image.fromarray(np.uint8(HandM)).save(config.ham)

儲存圖片

