Computer Vision I _2018

Homework assignment #1

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#使用 python
#import 套件
from PIL import Image
import numpy as np

#讀取 lena.bmp 與新建三個 bmp 檔
im = Image.open("lena.bmp") #讀取原始圖檔
im_upsidedown = Image.new("L", (512,512)) #新建上下顛倒圖檔
im_rightsideleft = Image.new("L", (512,512)) #新建左右顛倒圖檔
im_diagonal = Image.new("L", (512,512)) #新建對角線對稱圖檔

#先儲存原始資訊
original = np.zeros([512,512]) #儲存原始圖檔 pixels 之 value
for i in range (512):
    for j in range (512):
        original[i, j] = im.getpixel((i,j))

#改變 pixel 位置，根據需求填入三個 bmp 檔中
for i in range (512):
    for j in range (512):
        #上下顛倒
        im_upsidedown.putpixel((i,j), int(original[i, 511-j]))
        #左右顛倒
        im_rightsideleft.putpixel((i,j), int(original[511-i, j]))
        #對角線
        im_diagonal.putpixel((i,j), int(original[j, i]))

#顯示
im.show()
im_upsidedown.show()
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im_rightsideleft.show()
im_diagonal.show()

#儲存
im_upsidedown.save("im_upsidedown.bmp", "bmp")
im_rightsideleft.save("im_rightsideleft.bmp", "bmp")
im_diagonal.save("im_diagonal.bmp", "bmp")

#Part2 之(c)
im_binary = Image.new("L", (512,512), 255)

for i in range (512):
    for j in range (512):
        if original[i,j] < 128:
            im_binary.putpixel((i,j), 0)
im_binary.show()
im_binary.save("im_binary.bmp", "bmp")
```