

影像處理

Image Processing

作業一：

植基於位元平面之浮水印

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程式:

```
import cv2
import numpy as np

#Read images
image1 = cv2.imread("imageA.jpg", cv2.IMREAD_GRAYSCALE)
image2 = cv2.imread("imageB.jpg", cv2.IMREAD_GRAYSCALE)

#Distract LSB & MSB 4bits
image1_a = np.bitwise_and(image1, 0b11110000)
image2_a = np.bitwise_and(image2, 0b00001111)

#Embed watermark
marked_image = np.bitwise_or(image1_a, image2_a)

#Output marked image
cv2.imwrite('output1.jpg', marked_image)

#Distract marked image's MSB 4bits and original image's LSB-4bits
marked_image_b = np.bitwise_and(marked_image, 0b11110000)
image1_b = np.bitwise_and(image1, 0b00001111)

#Recover watermark
recover_image = np.bitwise_or(image1_b, marked_image_b)

#Output rocovered image
cv2.imwrite('output2.jpg', recover_image)
```

結果展示:



Figure 1 原圖



Figure 2 欲嵌入浮水印圖



Figure 3 加入浮水印



Figure 4 將浮水印還原