**影像處理**

**Image Processing**

**作業一:**

**植基於位元平面之浮水印**

學號: M11252023

姓名: 梁育赫

系所: 人工智慧跨域科技研究所

**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 2 欲嵌入浮水印圖

Figure 1 原圖



Figure 4 將浮水印還原



Figure 3 加入浮水印