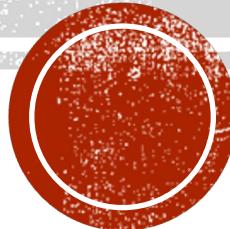


多媒體實習-OpenCV教學3



OUTLINE

- 最近插值法
- 雙線性插值法
- 影像浮水印



縮放

- ：輸入圖。
- ：輸出圖。
- 輸出圖的尺寸，
若為 則寬為 高為
- 水平軸縮放倍率，若為 則會用 去計算
- 垂直軸縮放倍率，若為 則會用 去計算
- 在做 時要使用的內插法，有下面幾種 可以使用

◆ resize()

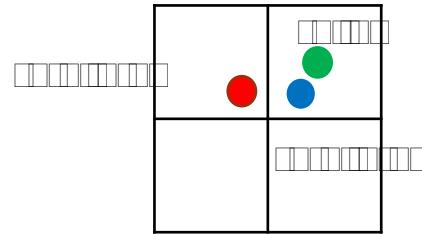
```
void cv::resize ( InputArray src,  
                  OutputArray dst,  
                  Size dsize,  
                  double fx = 0 ,  
                  double fy = 0 ,  
                  int interpolation = INTER_LINEAR  
                )
```



NEAREST NEIGHBOR INTERPOLATION

最近插值法

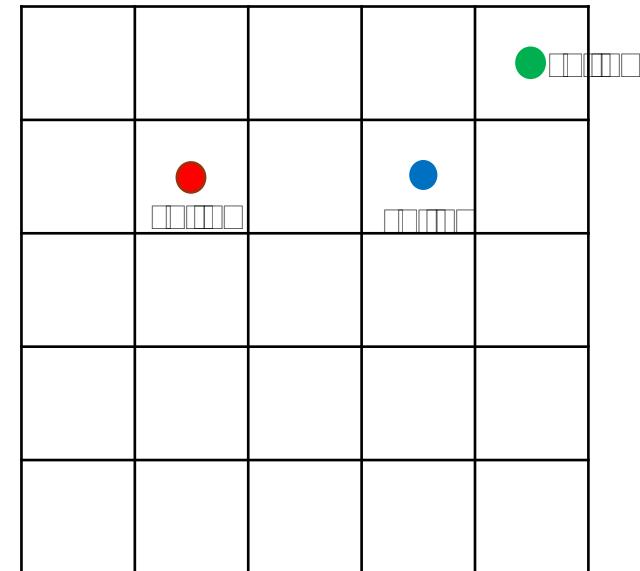
□無條件捨去□



原圖



放大□□倍



放大後圖片

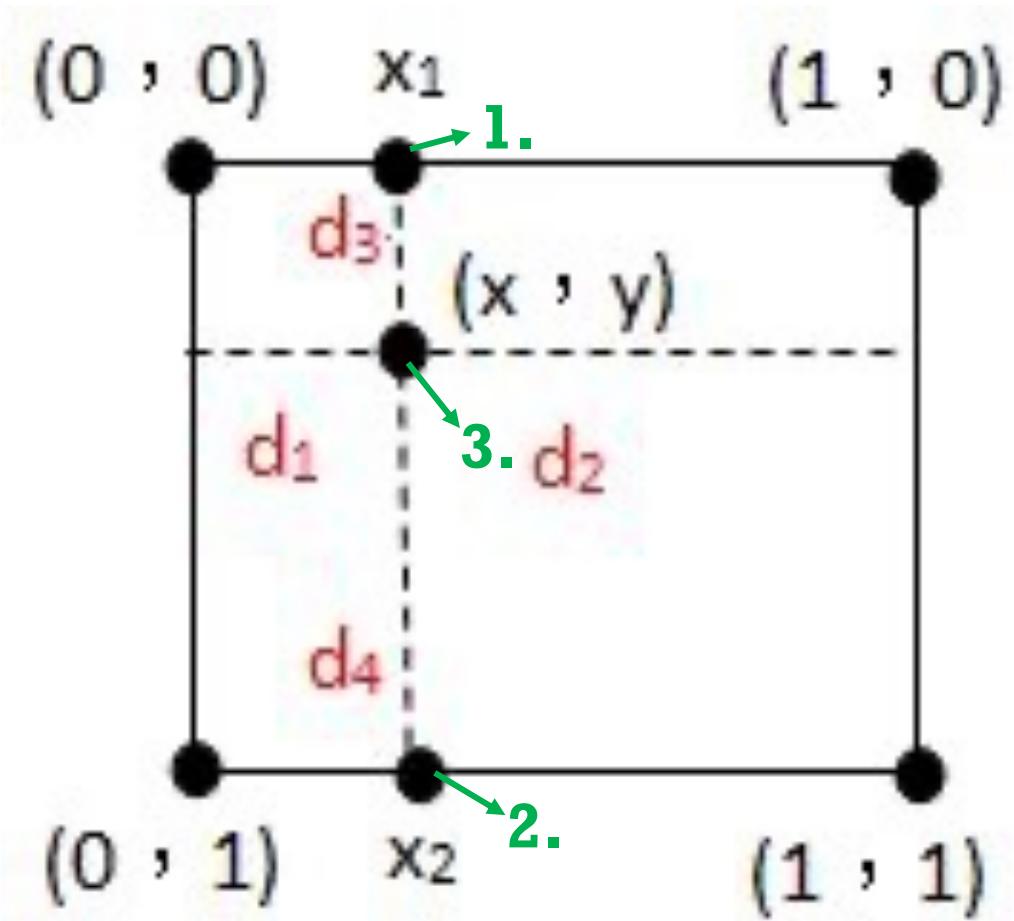
要用目標座標回推原圖座標



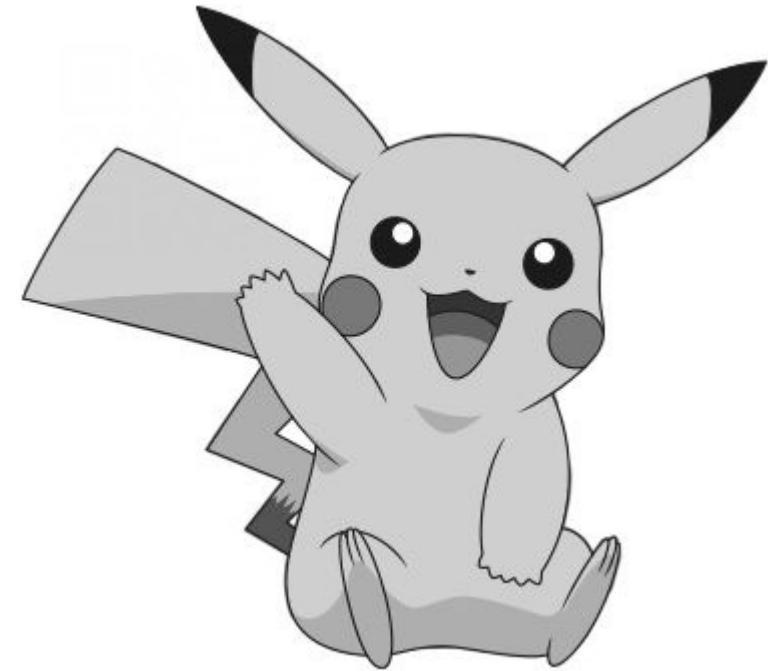
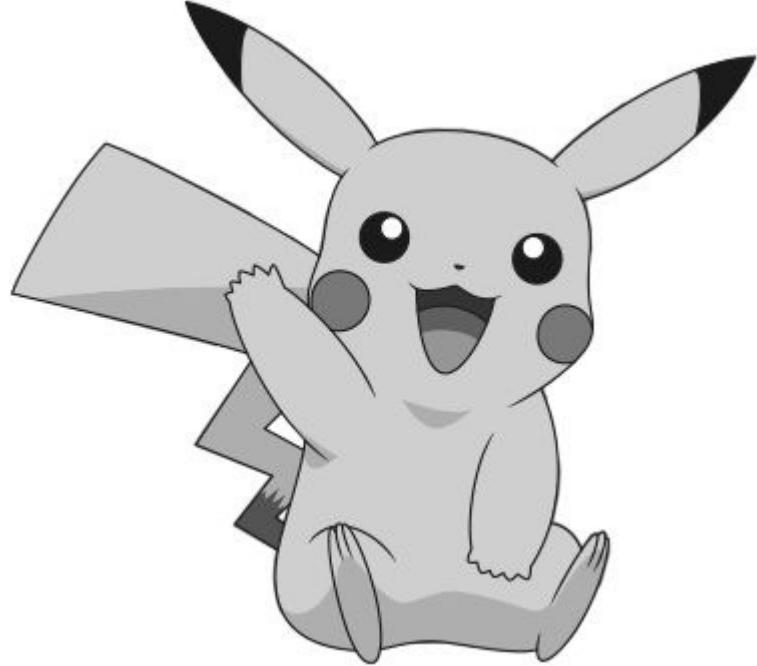
BILINEAR INTERPOLATION

雙線性插值法

- $f(x_1) = f(0,0) * d_2 + f(1,0) * d_1$
- $f(x_2) = f(0,1) * d_2 + f(1,1) * d_1$
- $f(x, y) = f(x_1) * d_4 + f(x_2) * d_3$
 $= f(0,0) * d_2 * d_4 +$
 $f(1,0) * d_1 * d_4 +$
 $f(0,1) * d_2 * d_3 +$
 $f(1,1) * d_1 * d_3$

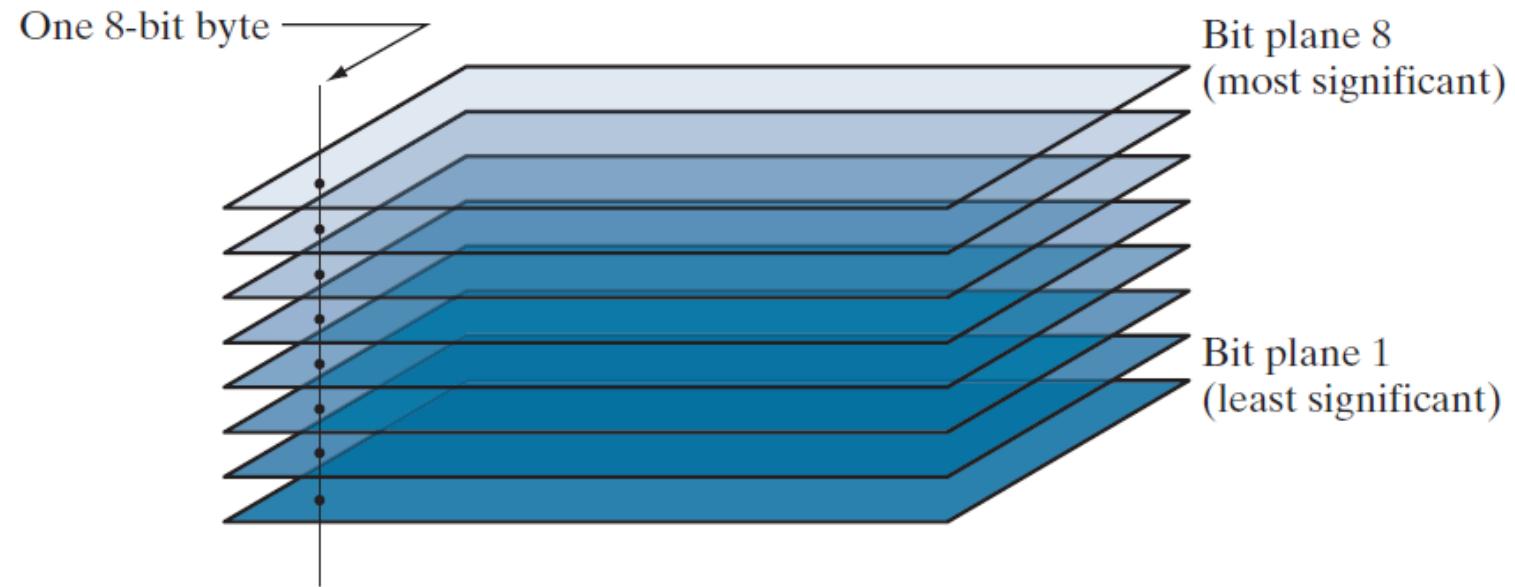


影像浮水印

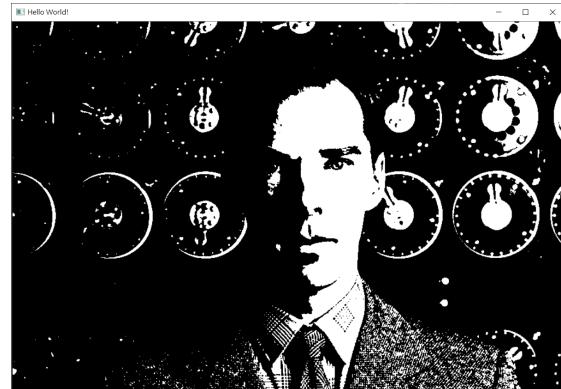


LSB 與 MSB

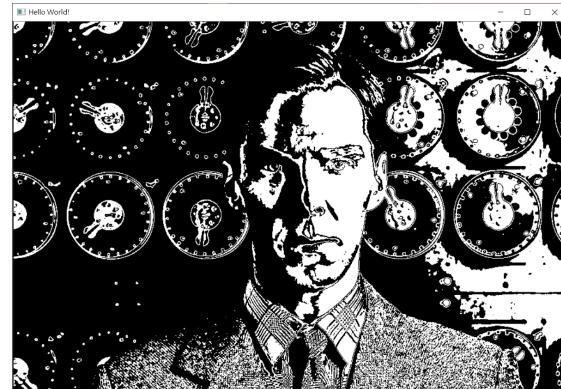
- 二進位數字串最不重要的位元
- 二進位數字串最重要的位元



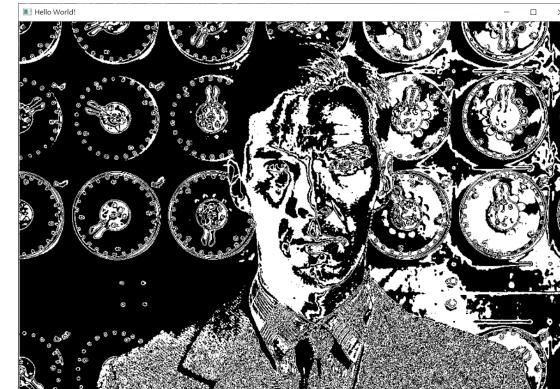
LSB 與 MSB



[第8位元影像, 0, 0, 0, 0, 0, 0, 0]



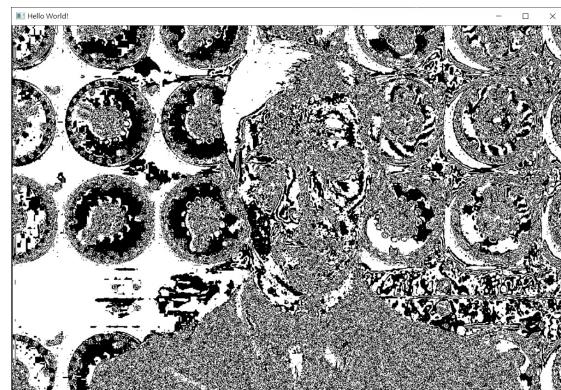
[0, 第7位元影像, 0, 0, 0, 0, 0, 0]



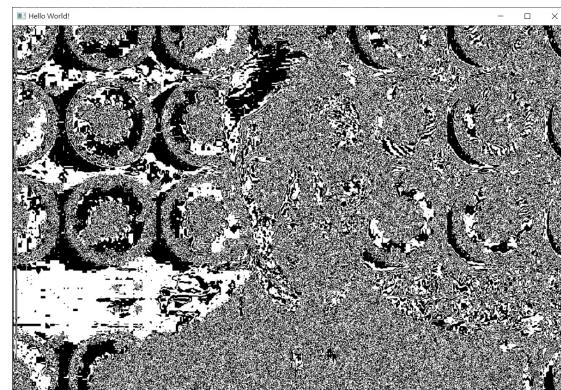
[0, 0, 第6位元影像, 0, 0, 0, 0, 0]



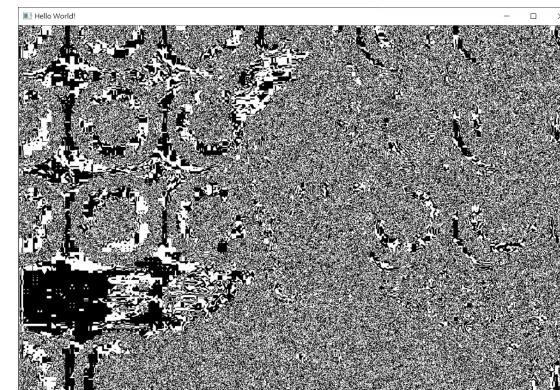
[0, 0, 0, 第5位元影像, 0, 0, 0, 0]



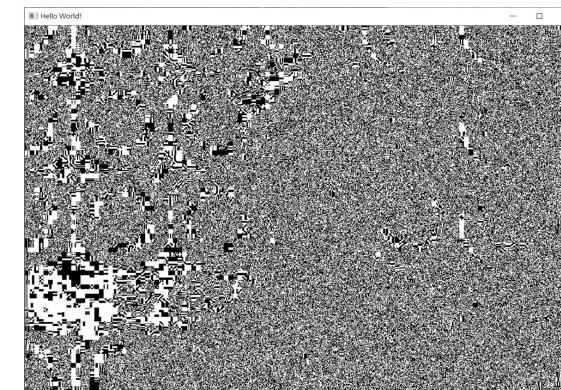
[0, 0, 0, 0, 第4位元影像, 0, 0, 0]



[0, 0, 0, 0, 0, 第3位元影像, 0, 0]

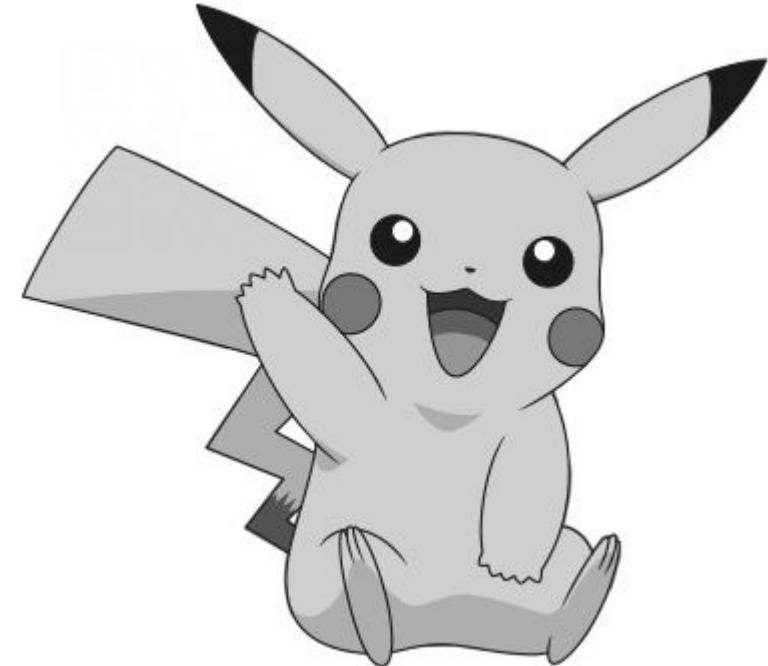
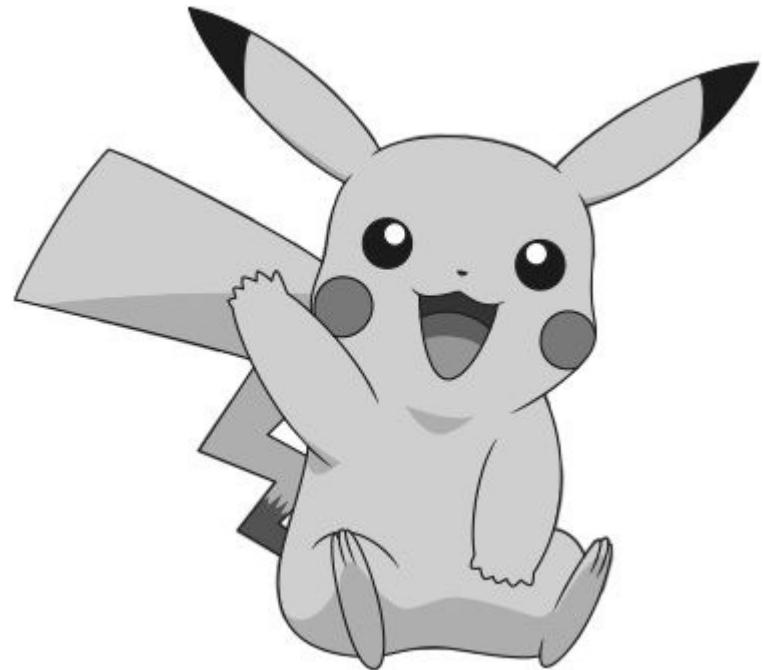


[0, 0, 0, 0, 0, 0, 第2位元影像, 0]

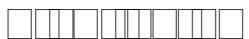
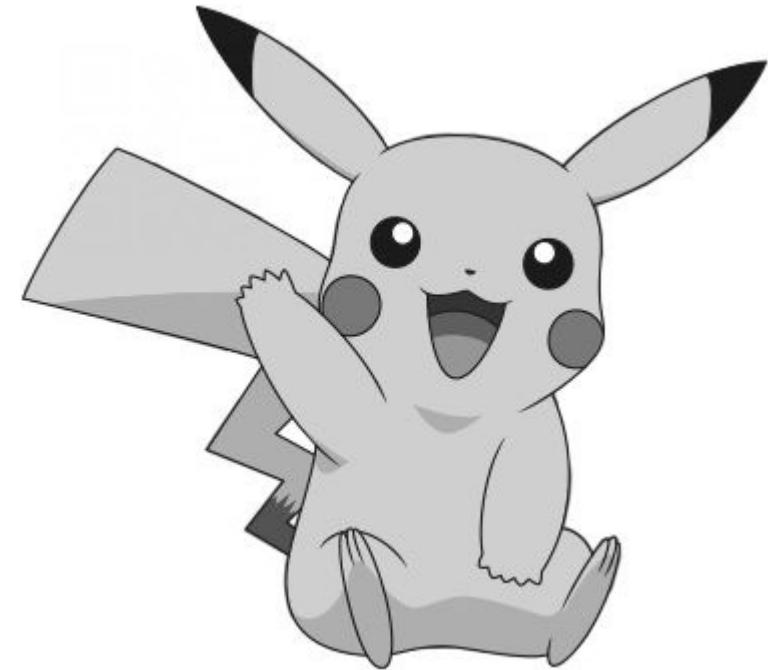
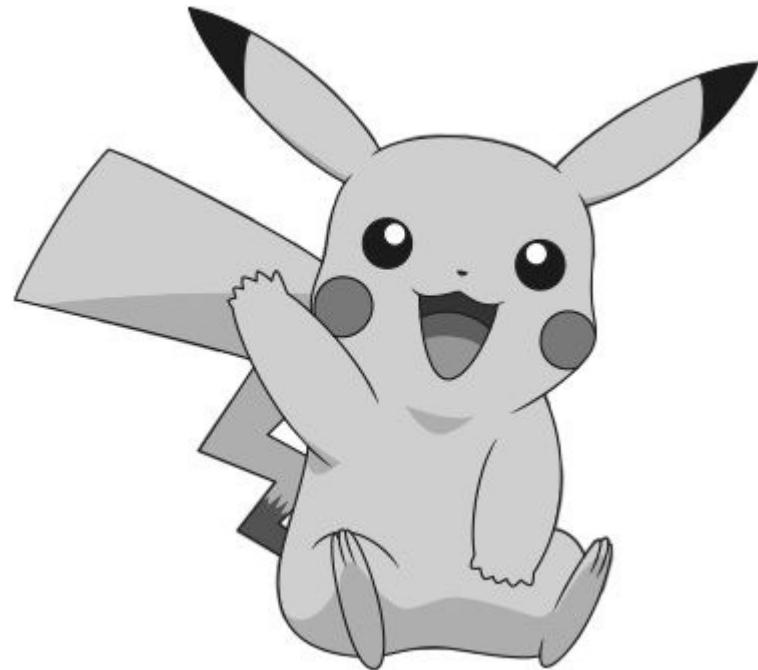


[0, 0, 0, 0, 0, 0, 0, 第1位元影像]

影像浮水印

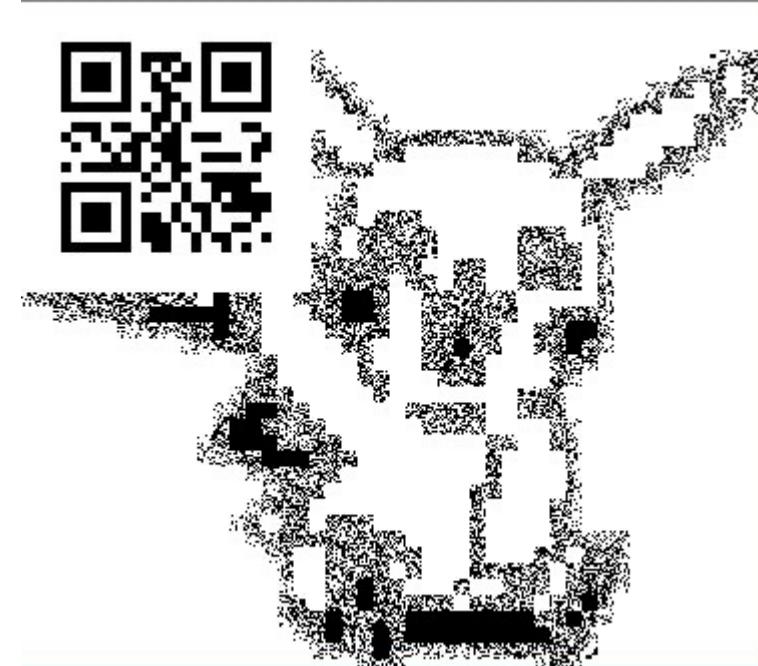
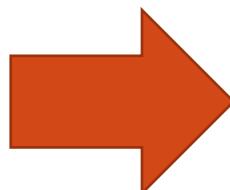
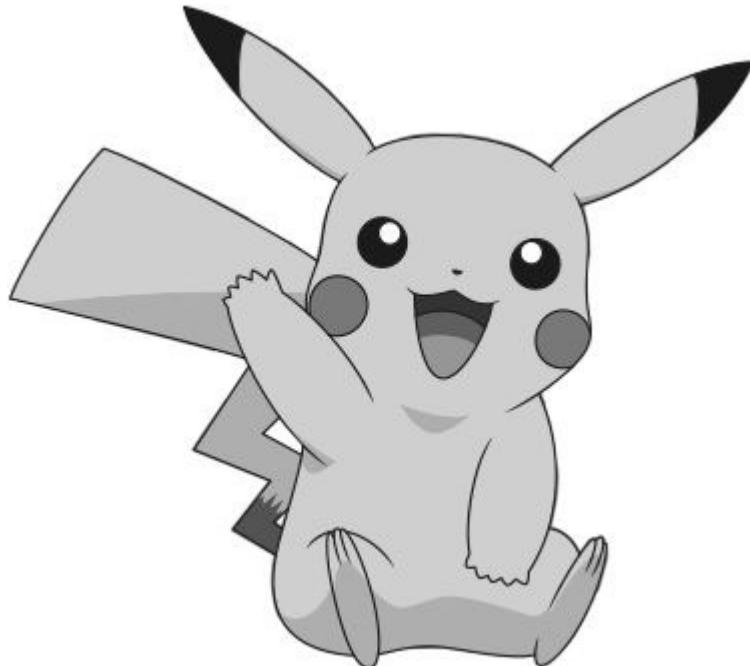


EXAMPLE_WATERMARK.CPP



練習

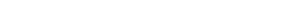
將隱藏在 的 解出來



針對通道資料做操作可參考



加分

- 實作  縮放 放大 倍

