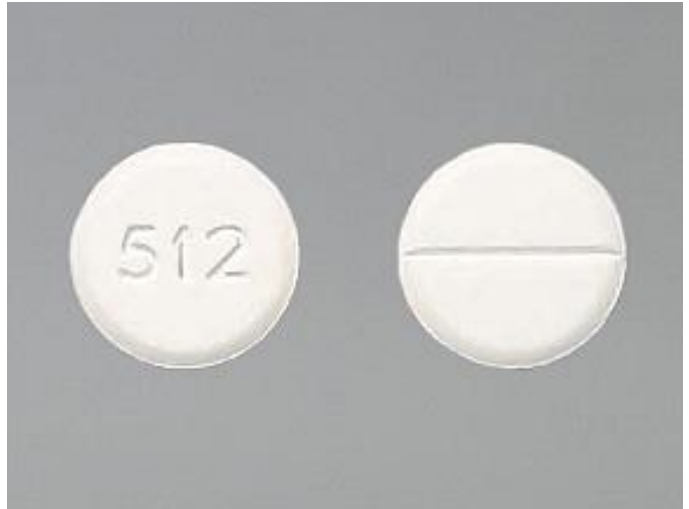


erode,dilate,open,close,

gray histogram ， color histogram

1. erode: 求局部最小值，透過模板以每列每欄的 pixel 單位一一檢核圖片，與模板相符則記錄模板中心點，當全部掃描後圖形則變成一個往內縮的圖形。(在進行侵蝕與膨脹時，都是以高亮度部分行刑膨脹或侵蝕)
2. dilate: 求局部最大值，透過模板以每列每欄的 pixel 單位一一檢核圖片，與模板不相符則記錄模板中心點，當全部掃描後圖形則變成一個往外擴的圖形。
3. open: 先侵蝕再膨脹。可將雜訊透過小白點侵蝕而消除
4. close: 先膨脹再侵蝕。可將圖片上小黑點去除
5. gray histogram:將圖片轉為灰階直方圖，觀看色彩分布平均圖。
6. color histogram: 將圖片轉為紅綠藍直方圖，觀看特定顏色分布平均圖。

實作



```
imshow("ORIGINAL", image);

//模板
Mat element = getStructuringElement(MORPH_RECT, Size(5,5));
Mat out;
/
dilate(image, out, element);
imshow("膨脹", out);

erode(image, out, element);
imshow("腐蝕", out);

morphologyEx(image, out, MORPH_OPEN, element);
imshow("open", out);

morphologyEx(image, out, MORPH_CLOSE, element);
imshow("close", out);
```



一串文字(B:模板 2 * 2)

```
imshow("ORIGINAL", image);
```

原圖

```
//模板
```

```
Mat element = getStructuringElement(MORPH_RECT, Size(5,5));
```

```
Mat out;
```

```
{
```

```
dilate(image, out, element);
```

```
imshow("膨脹", out);
```

```
erode(image, out, element);
```

```
imshow("腐蝕", out);
```

```
morphologyEx(image, out, MORPH_OPEN, element);
```

```
imshow("open", out);
```

```
morphologyEx(image, out, MORPH_CLOSE, element);
```

```
imshow("close", out);
```

```
imshow("ORIGINAL", image);
```

侵蝕

```
//模板
```

```
Mat element = getStructuringElement(MORPH_RECT, Size(5,5));
```

```
Mat out;
```

```
{
```

```
dilate(image, out, element);
```

```
imshow("膨脹", out);
```

```
erode(image, out, element);
```

```
imshow("腐蝕", out);
```

```
morphologyEx(image, out, MORPH_OPEN, element);
```

```
imshow("open", out);
```

```
morphologyEx(image, out, MORPH_CLOSE, element);
```

```
imshow("close", out);
```

```
imshow("ORIGINAL", image);
```

Close

```
//模板
```

```
Mat element = getStructuringElement(MORPH_RECT, Size(5,5));
```

```
Mat out;
```

```
{
```

```
dilate(image, out, element);
```

```
imshow("膨脹", out);
```

```
erode(image, out, element);
```

```
imshow("腐蝕", out);
```

```
morphologyEx(image, out, MORPH_OPEN, element);
```

```
imshow("open", out);
```

```
morphologyEx(image, out, MORPH_CLOSE, element);
```

```
imshow("close", out);
```

```
imshow("ORIGINAL", image);
```

膨脹

```
//模板
```

```
Mat element = getStructuringElement(MORPH_RECT, Size(5,5));
```

```
Mat out;
```

```
{
```

```
dilate(image, out, element);
```

```
imshow("膨脹", out);
```

```
erode(image, out, element);
```

```
imshow("腐蝕", out);
```

```
morphologyEx(image, out, MORPH_OPEN, element);
```

```
imshow("open", out);
```

```
morphologyEx(image, out, MORPH_CLOSE, element);
```

```
imshow("close", out);
```

```
imshow("ORIGINAL", image);
```

Open

```
//模板
```

```
Mat element = getStructuringElement(MORPH_RECT, Size(5,5));
```

```
Mat out;
```

```
{
```

```
dilate(image, out, element);
```

```
imshow("膨脹", out);
```

```
erode(image, out, element);
```

```
imshow("腐蝕", out);
```

```
morphologyEx(image, out, MORPH_OPEN, element);
```

```
imshow("open", out);
```

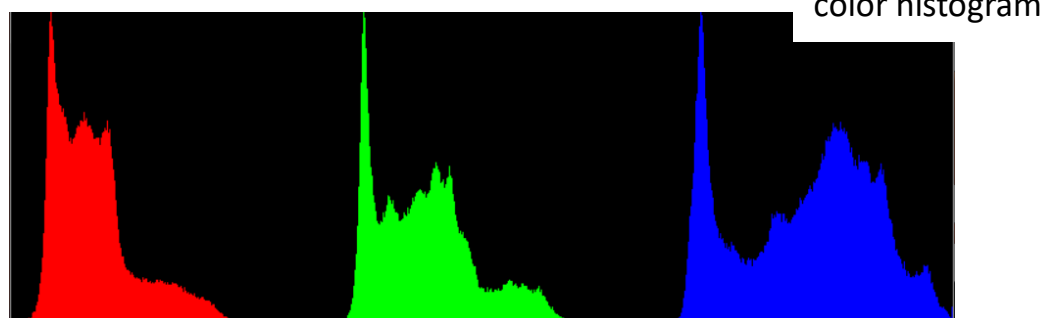
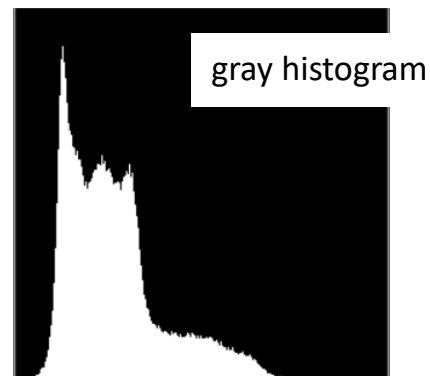
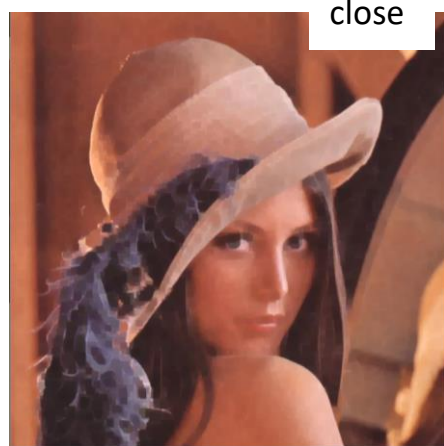
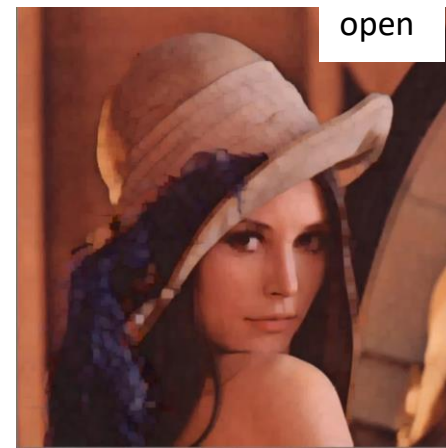
```
morphologyEx(image, out, MORPH_CLOSE, element);
```

```
imshow("close", out);
```

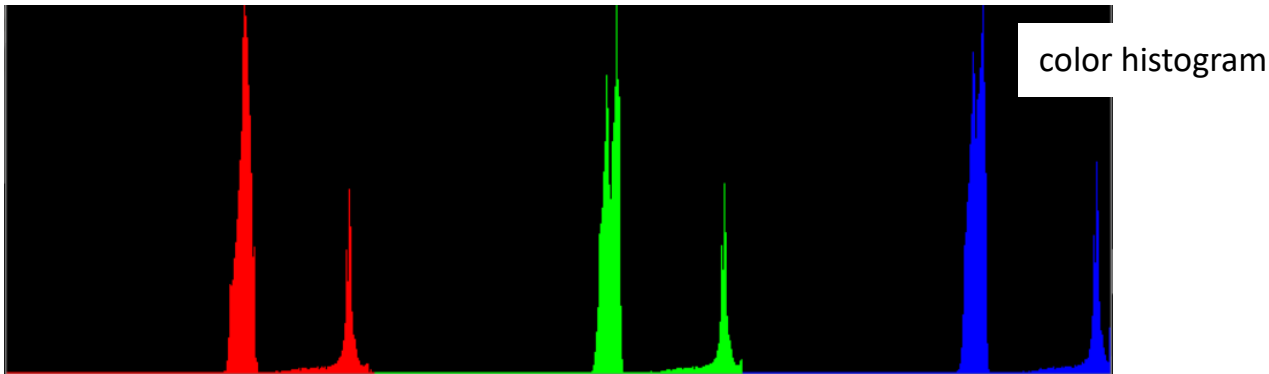
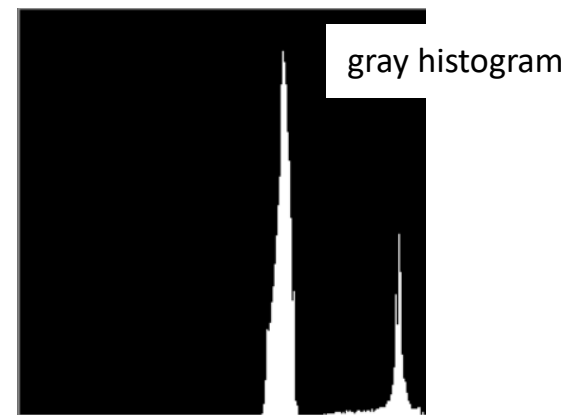
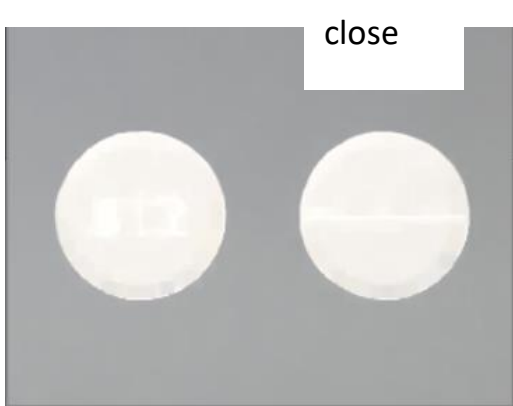
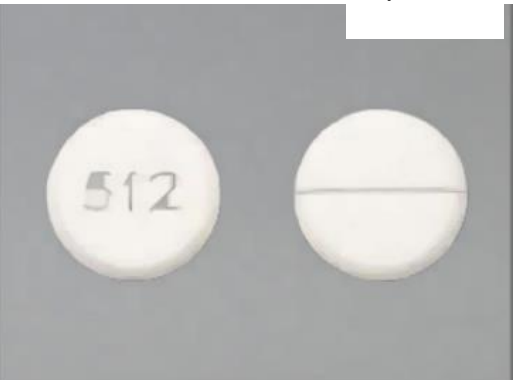
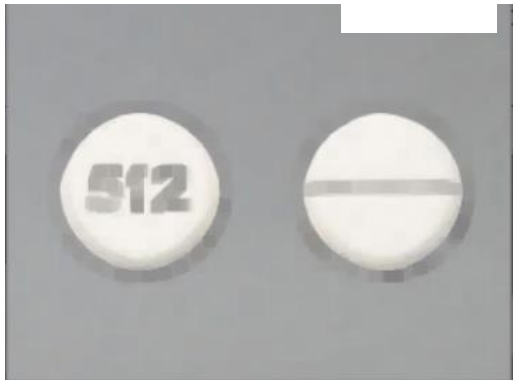
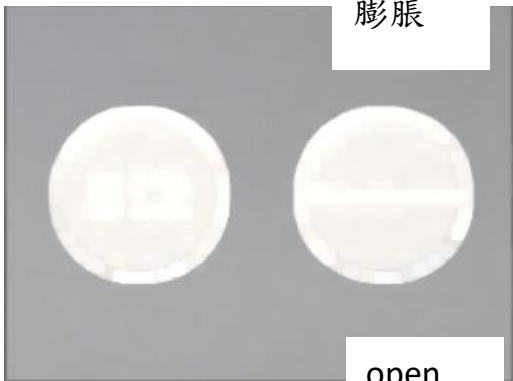
gray histogram

color histogram

OPENCV 範例圖(模板 7 * 7)



藥丸圖片(模板 7 * 7)



自己照片(7*7 模板)

原圖



侵蝕



膨脹



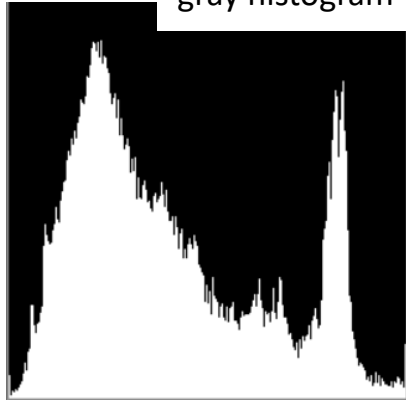
close



open



gray histogram



color histogram

