Computer Vision HW10

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Homework 10

Zero Crossing Edge Detection

Step:

1. 依照 mask 大小 padding 後,跟 mask 相乘並相加,如圖所示(有 **1/3** 的話就 將 temp0/3)

```
for(int i = 0; i < x; i++){
    for(int j = 0; j < y; j++){
        int temp0 = 0;
        for(int a = -5; a < 6; a++){
            for(int b = -5; b < 6; b++){
                temp0 += pic[i + 5 + a][j + 5 + b] * mask[a+5][b+5];
            }
        }
        if (temp0 >= threshold) temp[i+1][j+1] = 1;
        else if (temp0 <= -threshold) temp[i+1][j+1] = -1;
        else temp[i+1][j+1] = 0;
    }
}</pre>
```

2. 求出之結果進行 zero crossing edge detection,先將 step1 求出之 temp padding,然後進行計算如圖

Result:

(a) Laplace Mask1:

thresholds: 15

Mask:



(b) Laplace Mask2:

thresholds: 15

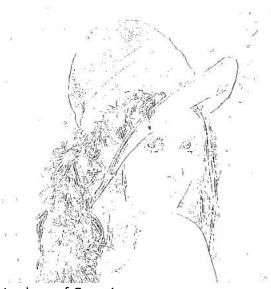
Mask:



(c) Minimum variance Laplacian: Mask:

thresholds: 20

thresholds: 3000



(d) Laplace of Gaussian:

Mask:

```
int mask[11][11] = { 0, 0, 0, -1, -1, -2, -1, -1, 0, 0, 0, 0, 0, 0, 0, -2, -4, -8, -9, -8, -4, -2, 0, 0, 0, -2, -7, -15, -22, -23, -22, -15, -7, -2, 0, -1, -4, -15, -24, -14, -1, -14, -24, -15, -4, -1, -1, -8, -22, -14, 52, 103, 52, -14, -22, -8, -1, -2, -9, -23, -1, 103, 178, 103, -1, -23, -9, -2, -1, -8, -22, -14, 52, 103, 52, -14, -22, -8, -1, -1, -4, -15, -24, -14, -1, -14, -24, -15, -4, -1, 0, -2, -7, -15, -22, -23, -22, -15, -7, -2, 0, 0, 0, -2, -4, -8, -9, -8, -4, -2, 0, 0, 0, 0, 0, -1, -1, -2, -1, -1, 0, 0, 0};
```



(e) Difference of Gaussian:

thresholds: 1

Mask:

