Computer Vision HW5 Report

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(a)

Dilation

- 將kernel與lena的每個pixel對齊，如果kernel值為1，將對到的lena pixel gray value與目前最大值tmp做比較與更新。

```
"""Gray Scale Dilation: Maximum"""
for i in range(r):
  for j in range(c):
    tmp = img[i][j]
    for x in range(-2,3):
      if i+x < 0 or i+x >= 512:
        break
      for y in range(-2,3):
        if j+y < 0 or j+y >= 512:
          break
        if kernel[x+2][y+2] == 1:
          tmp = max(tmp,img[i+x][y+j])

    dilation[i][j] = tmp
```

(b)

Erosion

- 將kernel與lena的每個pixel對齊，如果kernel值為1，將對到的lena pixel gray value與目前最小值tmp做比較與更新。

```python
"""Gray Scale Erosion: Minimum"""
for i in range(r):
  for j in range(c):
    tmp = img[i][j]
    for x in range(-2,3):
      if i+x < 0 or i+x >= 512:
        break
      for y in range(-2,3):
        if j+y < 0 or j+y >= 512:
          break
        if kernel[x+2][y+2] == 1:
          tmp = min(tmp,img[i+x][y+j])
```

```
erosion[i][j] = tmp
```


(c)

Opening

- 先做erosion再dilation

(d)

Closing

- 先做dilation再erosion