Computer vision HW5

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1. Dilation

```python
def Dilation(lena,mask):
    m=len(mask)
    n=len(mask[0])
    mm=len(lena)
    nn=len(lena[0])
    res=[[0]*nn for i in range(mm)]
    for i in range(m//2,mm-m//2):
        for j in range(n//2,nn-n//2):
            tmp=0
            for k in range(m):
                for l in range(n):
                    if mask[k][l]==1:
                        tmp=max(tmp,lena[i-(m//2-k)][j-(n//2-l)])
            res[i][j]=tmp
    return res
```

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2.Erosion

```python
def Erosion(lena,mask):
    m=len(mask)
    n=len(mask[0])
    mm=len(lena)
    nn=len(lena[0])
    res=[[0]*nn for i in range(mm)]
    for i in range(m//2,mm-m//2):
        for j in range(n//2,nn-n//2):
            tmp=255
            for k in range(m):
                for l in range(n):
                    if mask[k][l]==1:
                        tmp=min(tmp,lena[i-(m//2-k)][j-(n//2-l)])
            res[i][j]=tmp
    return res
```

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3.Opening

```
def Opening(lena,mask):
    return Dilation(Erosion(lena,mask),mask)
```

4.Closing

```
def Closing(lena,mask):
    return Erosion(Dilation(lena,mask),mask)
```