Computer Vision HW10 Report

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Execution

> Using python 3.7

```
$ python hw10.py
```

Result

$$A = \begin{bmatrix} 0 & 0 & 0 & -1 & -1 & -2 & -1 & -1 & 0 & 0 & 0 \\ 0 & 0 & -2 & -4 & -8 & -9 & -8 & -4 & -2 & 0 & 0 \\ 0 & -2 & -7 & -15 & -22 & -23 & -22 & -15 & -7 & -2 & 0 \\ -1 & -4 & -15 & -24 & -14 & -1 & -14 & -24 & -15 & -4 & -1 \\ -1 & -8 & -22 & -14 & 52 & 103 & 52 & -14 & -22 & -8 & -1 \\ -2 & -9 & -23 & -1 & 103 & 178 & 103 & -1 & -23 & -9 & -2 \\ -1 & -8 & -22 & -14 & 52 & 103 & 52 & -14 & -22 & -8 & -1 \\ -1 & -4 & -15 & -24 & -14 & -1 & -14 & -24 & -15 & -4 & -1 \\ 0 & -2 & -7 & -15 & -22 & -23 & -22 & -15 & -7 & -2 & 0 \\ 0 & 0 & -2 & -4 & -8 & -9 & -8 & -4 & -2 & 0 & 0 \\ 0 & 0 & 0 & -1 & -1 & -2 & -1 & -1 & 0 & 0 & 0 \end{bmatrix}$$

$$B = \begin{bmatrix} -1 & -3 & -4 & -6 & -7 & -8 & -7 & -6 & -4 & -3 & -1 \\ -3 & -5 & -8 & -11 & -13 & -13 & -13 & -11 & -8 & -5 & -3 \\ -4 & -8 & -12 & -16 & -17 & -17 & -17 & -16 & -12 & -8 & -4 \\ -6 & -11 & -16 & -16 & 0 & 15 & 0 & -16 & -16 & -11 & -6 \\ -7 & -13 & -17 & 0 & 85 & 160 & 85 & 0 & -17 & -13 & -7 \\ -8 & -13 & -17 & 15 & 160 & 283 & 160 & 15 & -17 & -13 & -8 \\ -7 & -13 & -17 & 0 & 85 & 160 & 85 & 0 & -17 & -13 & -7 \\ -6 & -11 & -16 & -16 & 0 & 15 & 0 & -16 & -16 & -11 & -6 \\ -4 & -8 & -12 & -16 & -17 & -17 & -17 & -16 & -12 & -8 & -4 \\ -3 & -5 & -8 & -11 & -13 & -13 & -13 & -11 & -8 & -5 & -3 \\ -1 & -3 & -4 & -6 & -7 & -8 & -7 & -6 & -4 & -3 & -1 \end{bmatrix}$$

Operator	Kernel/Threshold	Image
Laplacian	$\begin{bmatrix} 0 & 1 & 0 \\ 1 & -4 & 1 \\ 0 & 1 & 0 \end{bmatrix}$ $Threshold = 15$	
Laplacian	$\frac{1}{3}\begin{bmatrix} 1 & 1 & 1 \\ 1 & -8 & 1 \\ 1 & 1 & 1 \end{bmatrix}$ $Threshold = 15$	
Minimum Variance Laplacian	$\frac{1}{3}\begin{bmatrix} 2 & -1 & 2 \\ -1 & -4 & -1 \\ 2 & -1 & 2 \end{bmatrix}$ $Threshold = 20$	

Laplacian of Gaussian	$Matrix\ A$ $Threshold = 3000$	
Difference of Gaussian	$Matrix\ B$ $\sigma_{inhibitory} = 3$ $\sigma_{excitatory} = 1$ $kernel\ size = 11$ $Threshold = 1$