Homework 10

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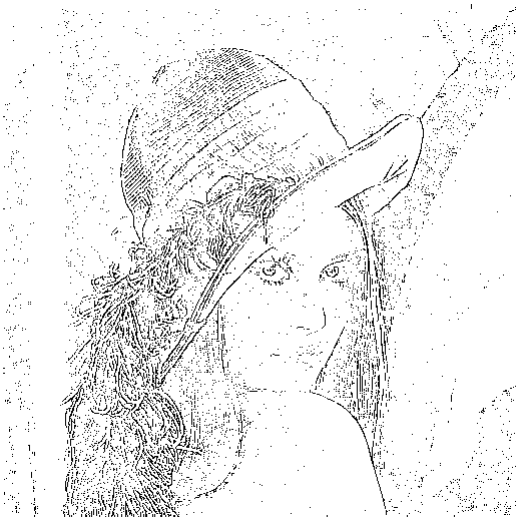
1. **Laplacian (threshold =15)**

Mask 1:

```
Kernel = np.array([
                    [0, 1, 0],
                    [1, -4, 1],
                    [0, 1, 0]
                  ])
```

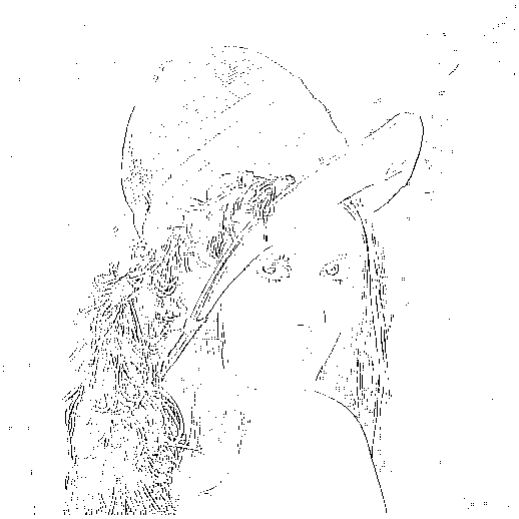
Mask2:

```
Kernel = np.array([
                      [1, 1, 1],
                      [1, -8, 1],
                      [1, 1, 1]
                    ])/3
```



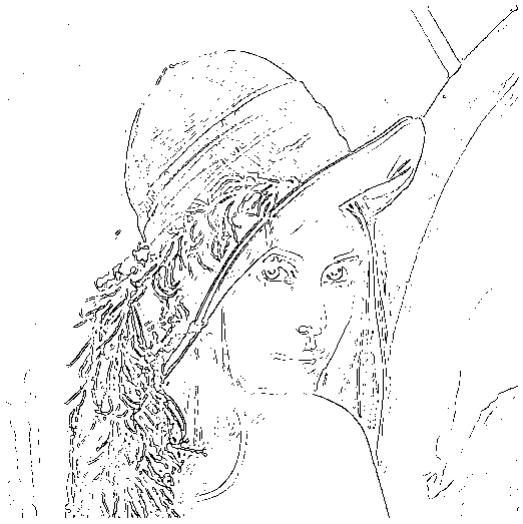
2. **Minimum variance Laplacian (threshold = 30)**

```
Kernel= np.array([
                    [2, -1, 2],
                    [-1, -4, -1],
                    [2, -1, 2]
                ])/3
```



3. **Laplacian of Gaussian (threshold = 3000)**

```
Kernel = np.array([
                    [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]
                ])
```



4. Difference of Gaussian (threshold =1)

```
Kernel= np.array([
        [-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],
    ])
```