Computer Vision_HW9

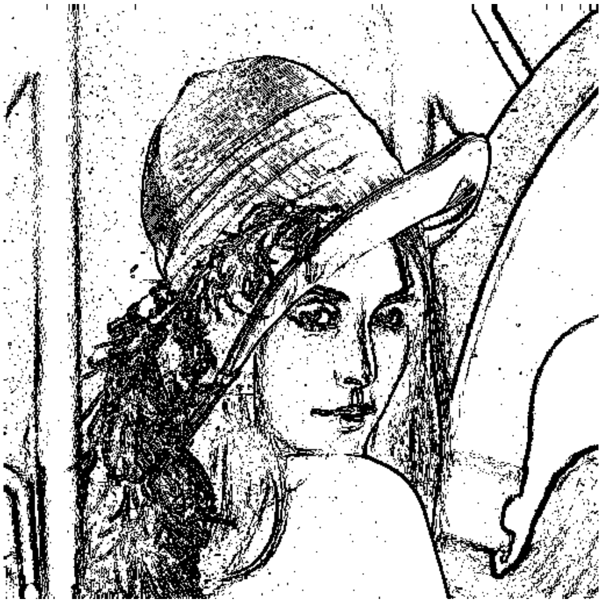
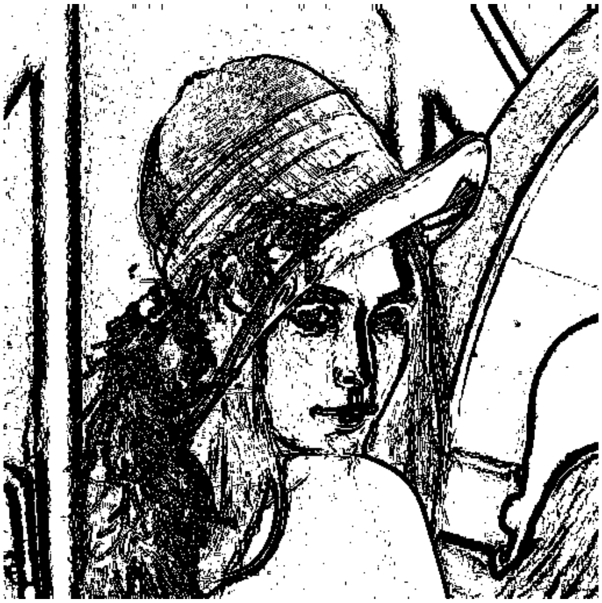
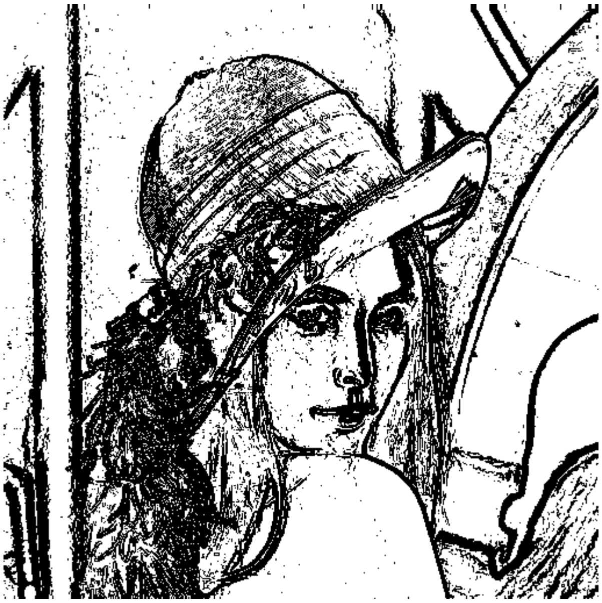
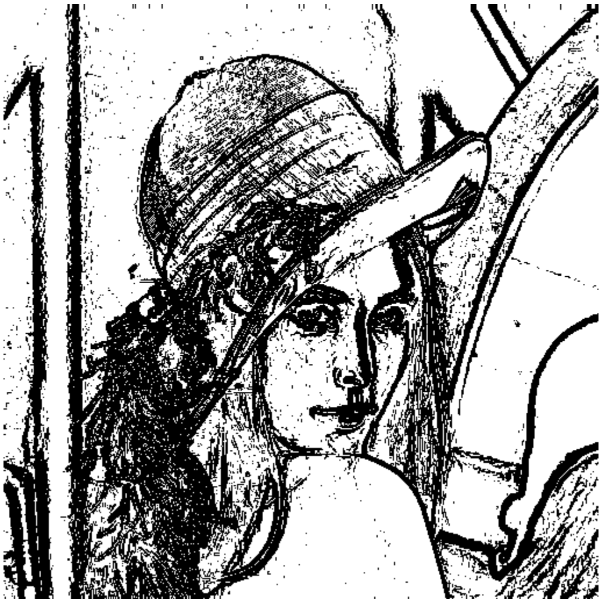
R09922093 楊子萱

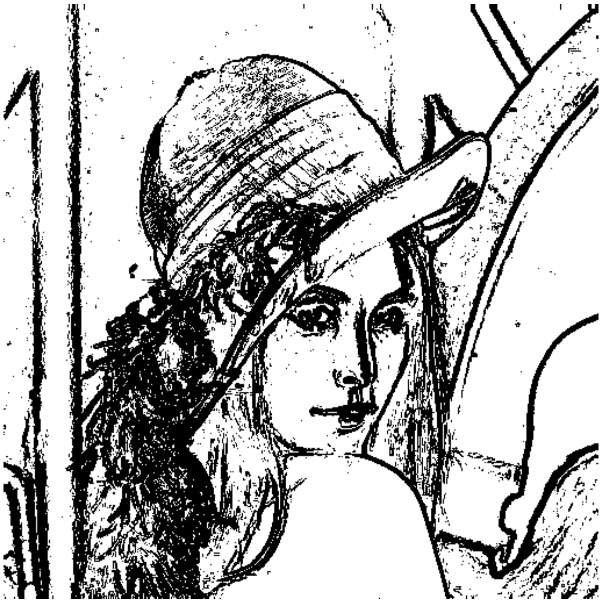
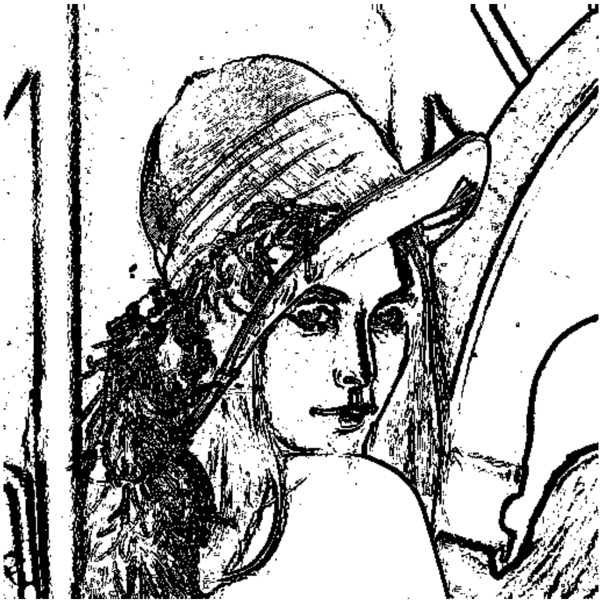
In this homework, I use python3 and import cv2 to read and write images and use cv2 function to translate image into the binary image. To run my code, use command line and enter python3 hw9.py (http://hw9.py) .
In this homework, I used two functions with different kernel values to complete all pictures. For (a) to (d), use the function below to calculate the Euclidean distance for each pixel value with kernel values.

```
def Edgedetector(image, threshold, array1, array2):
        resultimg = np.full((512, 512),255)
        for i in range(512):
                for j in range(512):
                        value = mask(image, i, j, array1)**2 + mask(image, i,
                                 j, array2)**2
                        if value > threshold*threshold:
                                resultimg[i][j] = 0
                        else:
                                resultimg[i][j] = 255
        return resultimg
```

For (e) to (f), use the function below to find the max value for each pixel within multiple kernels.

```
def Compass(image, threshold, arraylist):
        resultimg = np.full((512, 512),255)
        for i in range(512):
                for j in range(512):
                        valuelist = []
                        for k in range(len(arraylist)):
                                valuelist.append(mask(image, i, j, arraylist[k
                        value = max(valuelist)
                        # print(value)
                        if value > threshold:
                                resultimg[i][j] = 0
                        else:
                                resultimg[i][j] = 255
        return resultimg
```

(a) Robert's Operator: 12	**(b) Prewitt's Edge Detector: 24**
	
(c) Sobel's Edge Detector: 38	(d) Frei and Chen's Gradient Operator: 30
	
(e) Kirsch's Compass Operator: 135	(f) Robinson's Compass Operator: 43

(a) Robert’s Operator: 12	(b) Prewitt’s Edge Detector: 24
	

(g) Nevatia-Babu 5x5 Operator: 12500