Introduction to Image Processing

HW5

Due: 01/07/2023

HW3.1 Hough Transform

Use the Hough transform to detect the *strongest line* in the binary image shown below.

1. Use the form $xcos\theta + ysin\theta = r$ with θ in step of 45^{o} from - 45^{o} to 90^{o}.
2. Place the results in an accumulator array.

	-3	-2	-1	0	1	2	3
-3	0	0	0	0	0	1	0
-2	0	0	0	0	0	0	0
-1	0	1	0	1	0	1	0
0	0	0	1	0	0	0	0
1	0	0	0	0	0	0	0
2	1	0	0	0	0	1	0
3	0	0	0	0	0	0	0

HW3.2 Skeletonization

Perform skeletonization on the image A with the structuring element B.

A

0	0	0	0	0	0	0	0
0	0	0	1	1	1	1	0
0	0	0	1	1	1	1	0
0	1	1	1	1	1	1	0
0	1	1	1	1	1	1	0
0	1	1	1	1	0	0	0
0	1	1	1	1	0	0	0
0	0	0	0	0	0	0	0

0	1	0
1	1	1
0	1	0

B

H3.3 Hit –or-miss transform

Use the hit or miss transform with appropriate structuring element to find the dot on “I” in the word “Friday” in the image “friday_text.png”.