4104I5069 電機三 陳毅軒

HW3.1 Hough Transform

for all θ, $x\cos\theta + y\sin\theta$

(x,y) \ θ	-45°	0°	45°	90°
(2,-3)	3.54	2	-0.71	-3
(0,-1)	0.71	0	-0.71	-1
(2,-1)	2.12	2	0.71	-1
(-1,0)	-0.71	-1	-0.71	0
(-3,2)	-3.54	-3	-0.71	2
(2,2)	0	2	2.83	2

	-3.54	-3	-1	-0.71	0	0.71	2	2.12	2.83	3.54
-45°	1			1	1	1		1		1
0°		1	1		1		3			
45°				4		1			1	
90°		1	2		1		2			

最大值出現在 $x\cos45° + y\sin45° = -0.71$

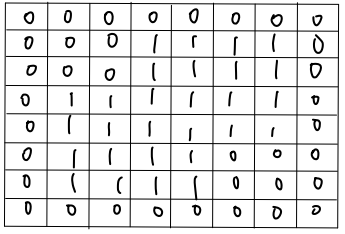
$$\Rightarrow y = -x - \frac{0.71\times 2}{\sqrt{2}} = -x - 1.004$$

$\Rightarrow y = -x - 1$，過 $(0,-1)$，$m = -1$

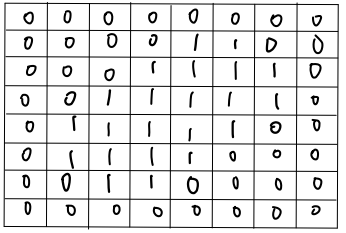
	−3	−2	−1	0	1	2	3
-3	0	0	0	0	0	0	0
-2	0	0	0	0	0	0	0
-1	0	1	0	1	0	1	0
0	0	0	1	0	0	0	0
1	0	0	0	0	0	0	0
2	1	0	0	0	0	1	0
3	0	0	0	0	0	0	0

$y = -x - 1$

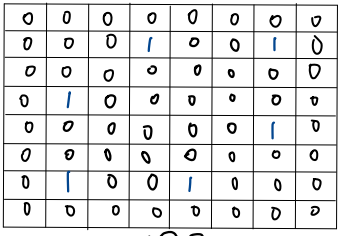
HW3.2 Skeletonization



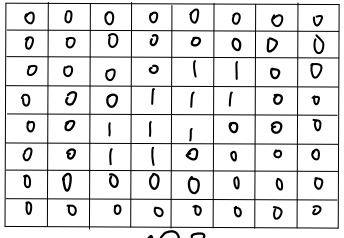
A



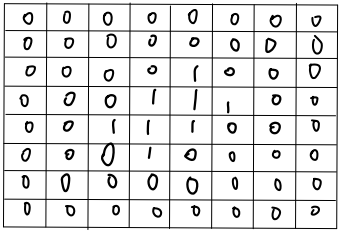
$A \circ B = (A \ominus B) \oplus B$



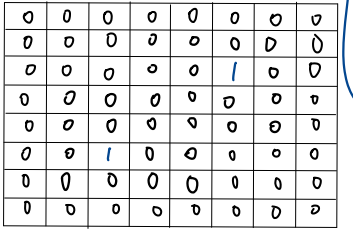
$A \ominus B$



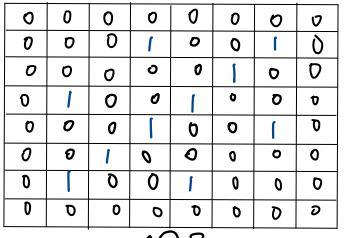
$A \ominus B$



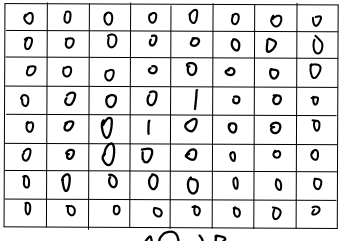
$(A \ominus B) \circ B = (A \ominus 2B) \oplus B$



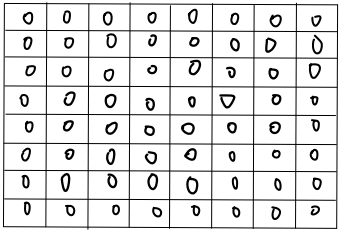
$(A \ominus B) - ((A \ominus B) \circ B)$



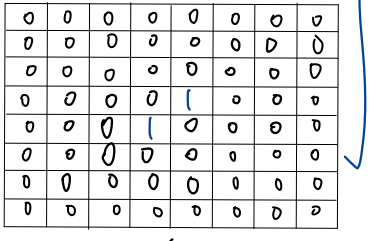
$A \ominus B$



$A \ominus 2B$



$(A \ominus 2B) \circ B = (A \ominus 3B) \oplus B$



$(A \ominus 2B) - ((A \ominus 2B) \circ B)$