Mathematical Morphology

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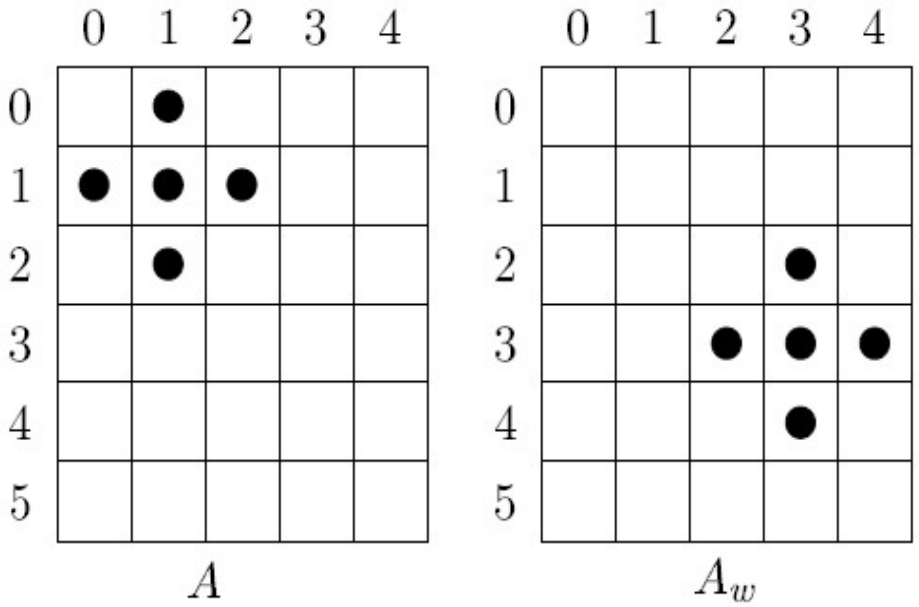
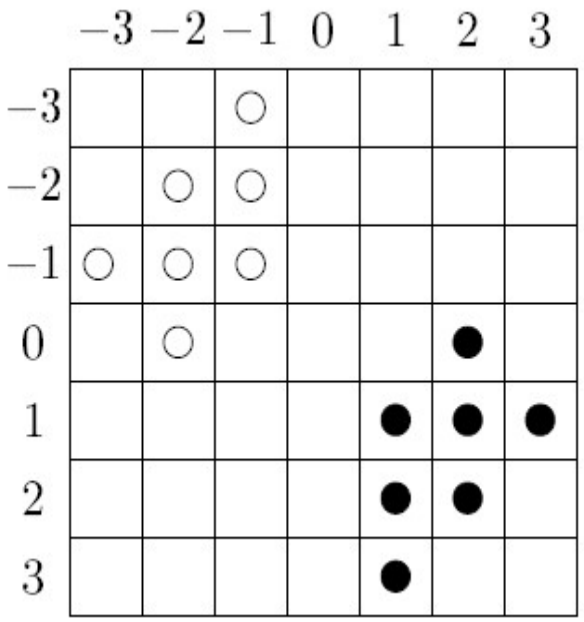
Department of Computer Science and Information Engineering,
National Yunlin University of Science and Technology

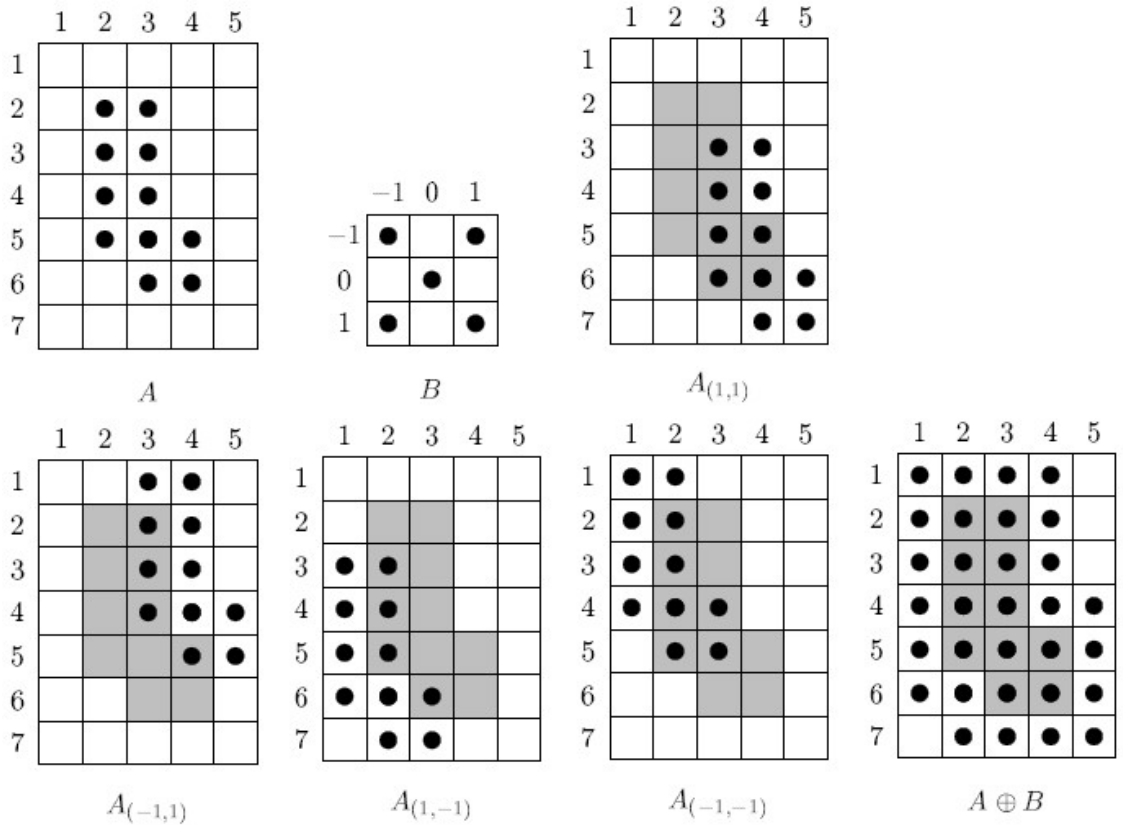
Translation



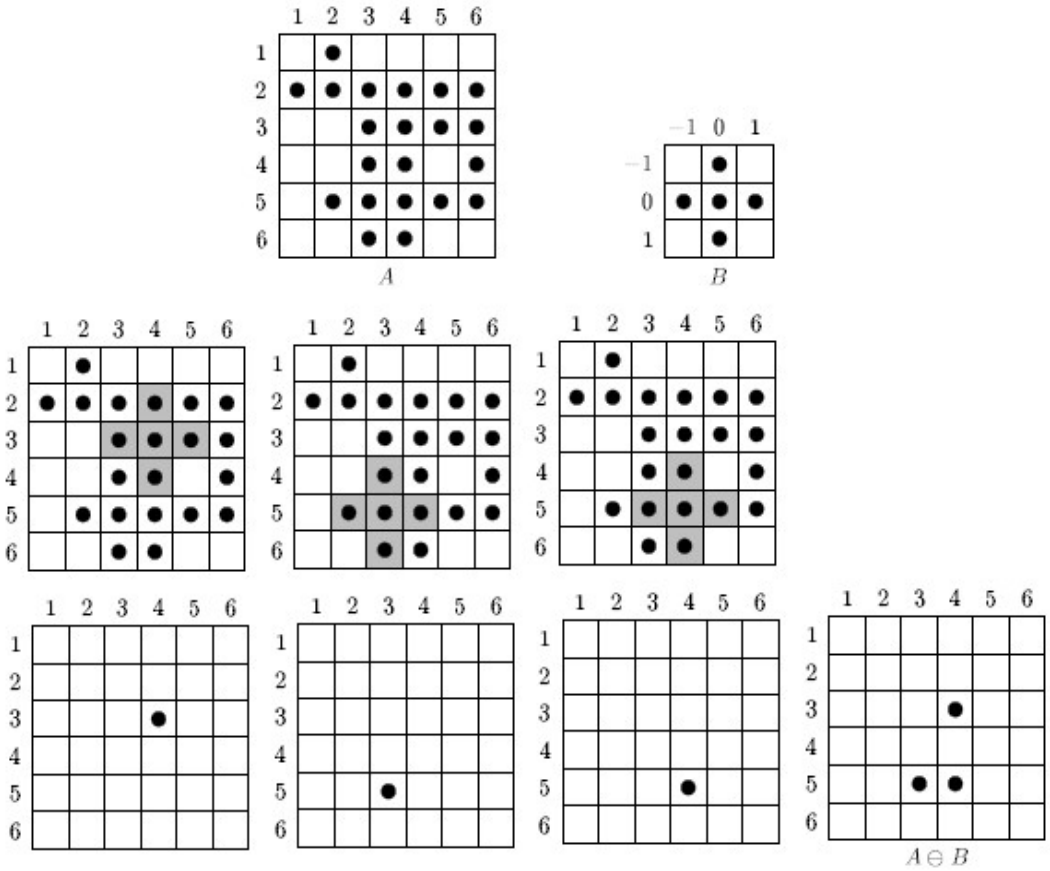
Reflection



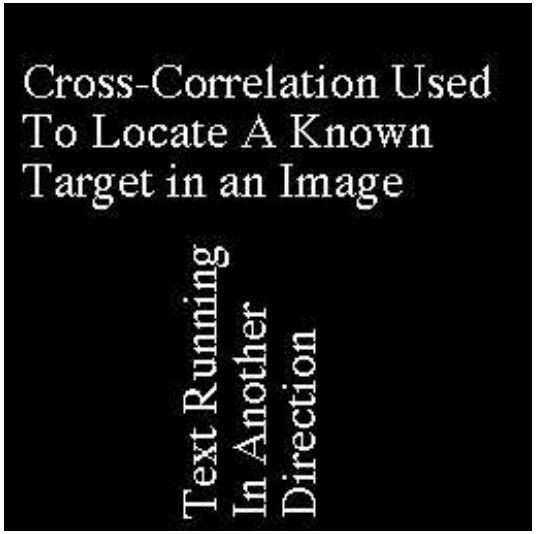
Dilation



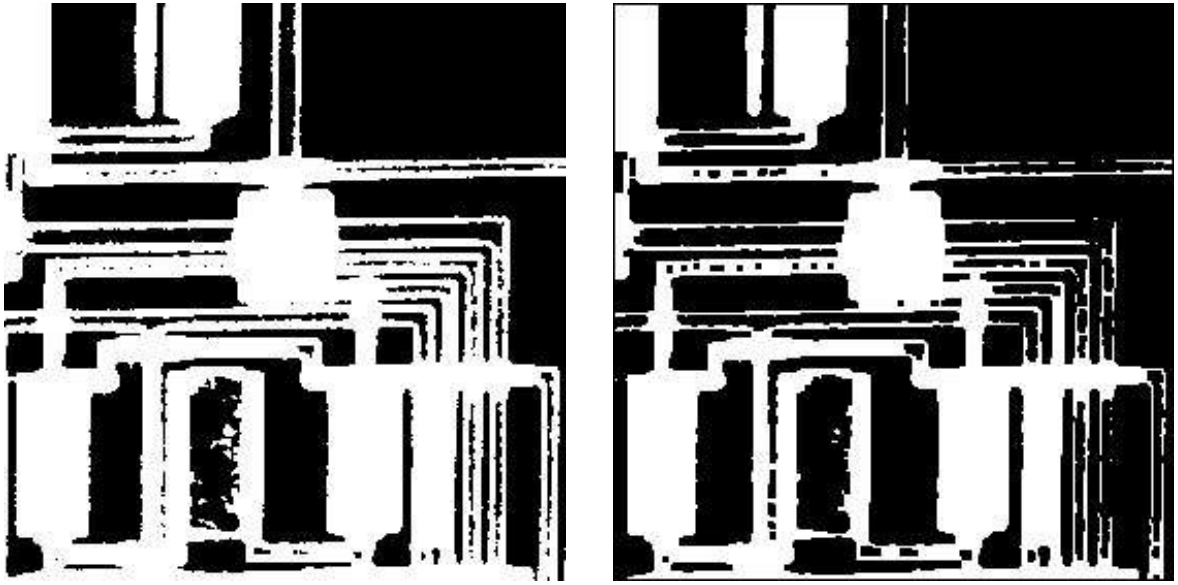
Erosion



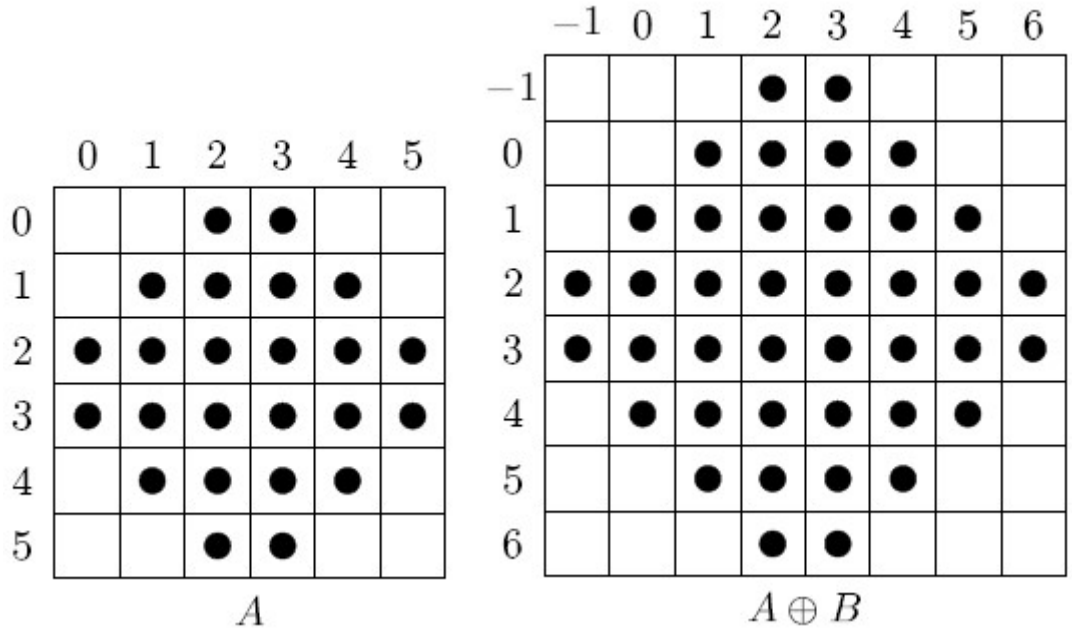
Application



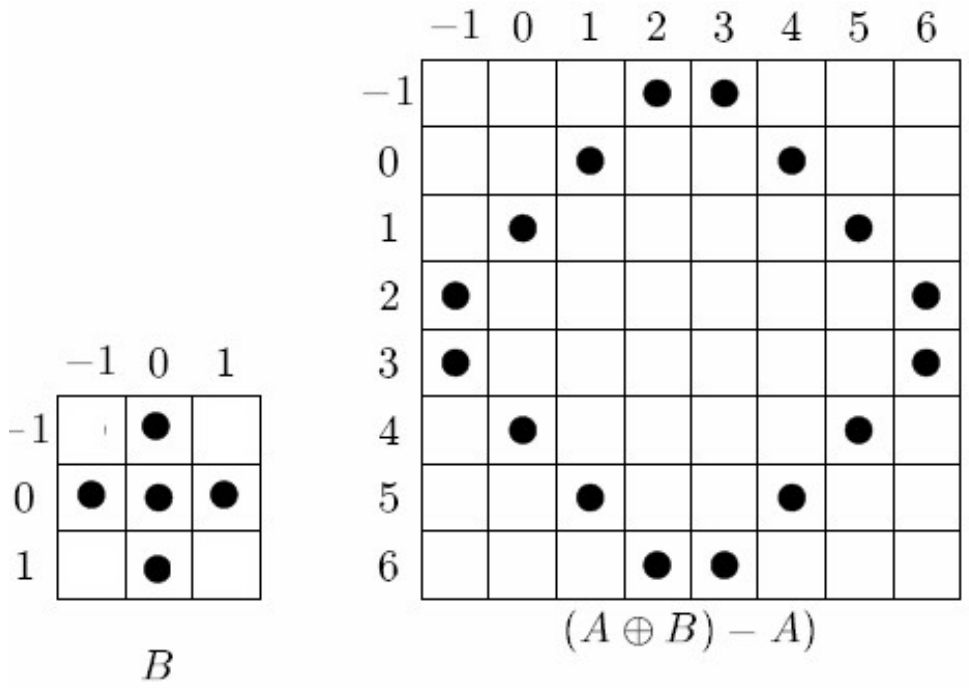
Application



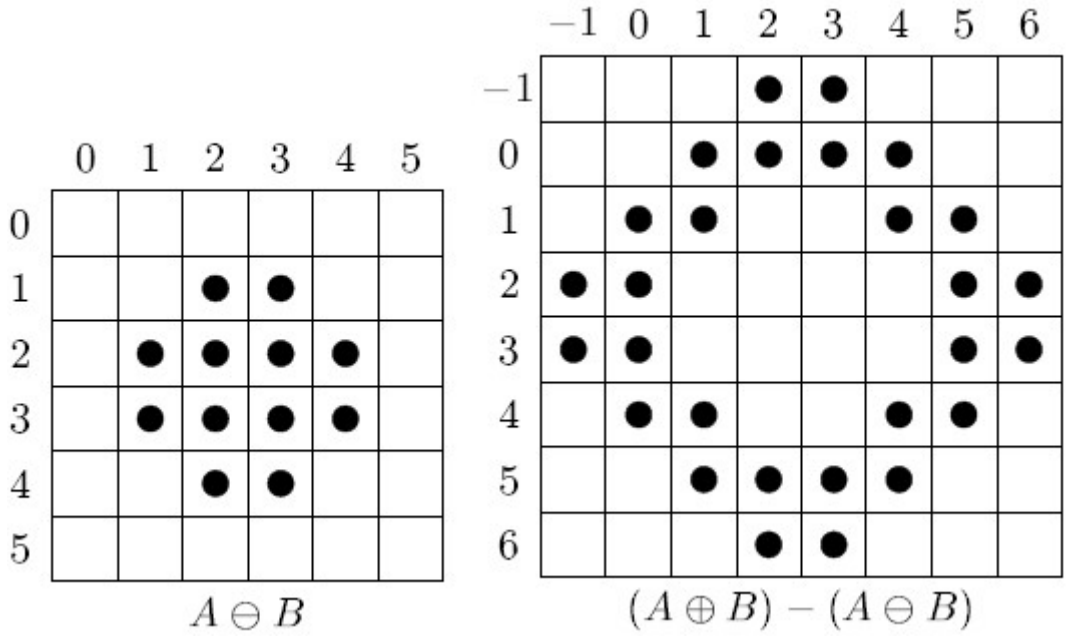
Boundary Detection



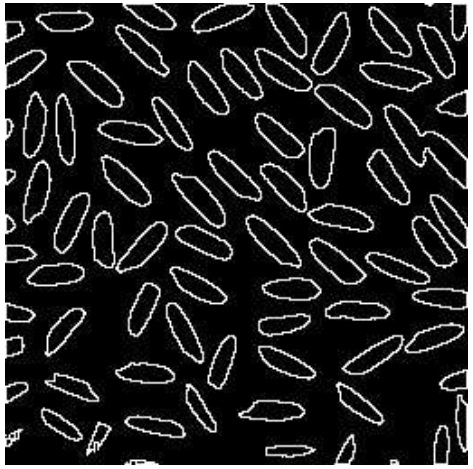
Boundary Detection



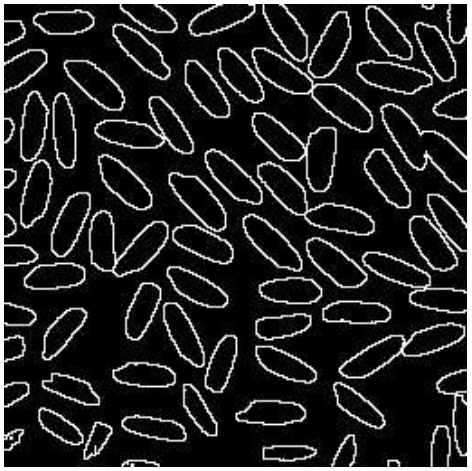
Boundary Detection



Boundary Detection



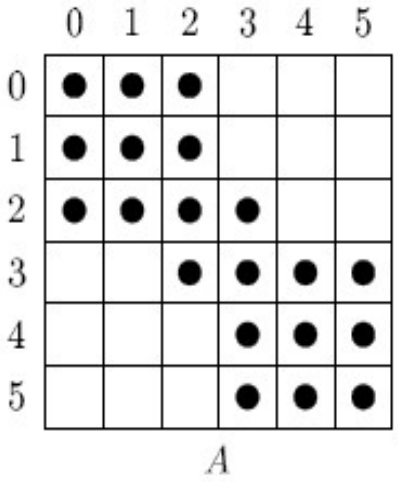
$A - (A \ominus B)$



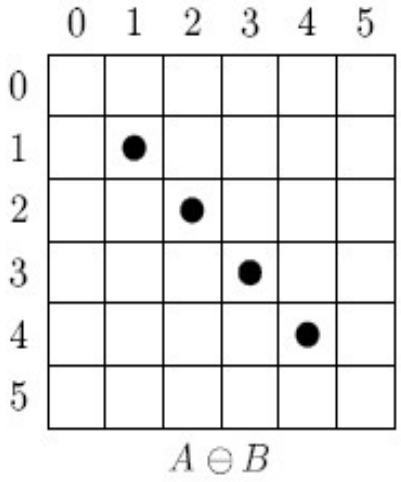
$(A \oplus B) - A$

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

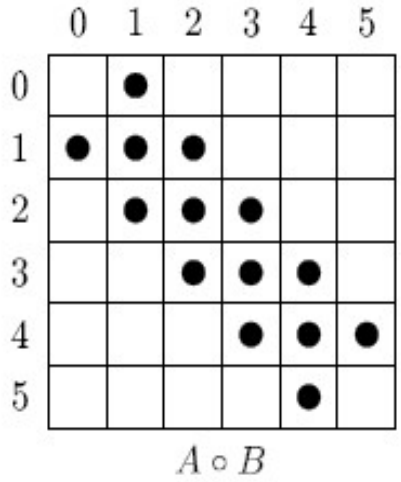
Opening



A

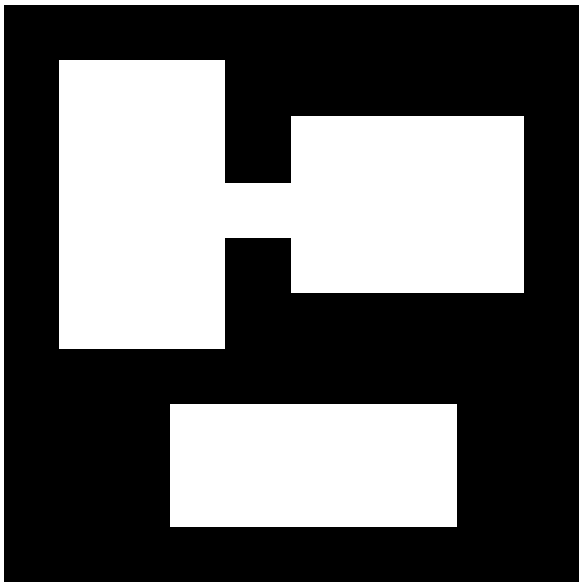


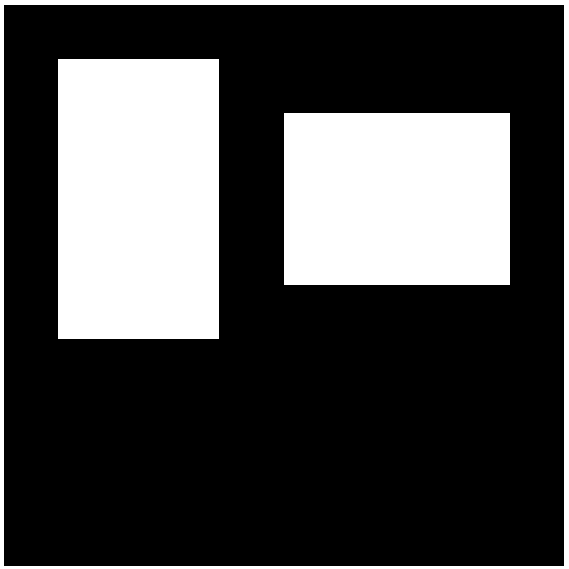
$A \ominus B$

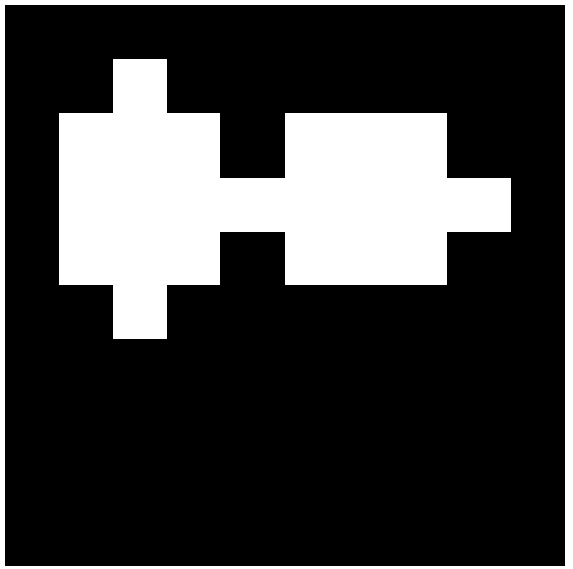


$A \circ B$

Opening



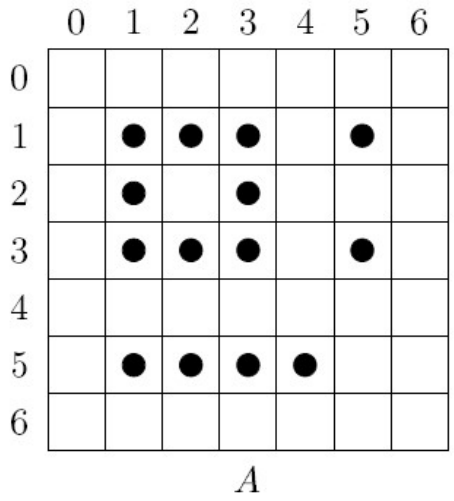


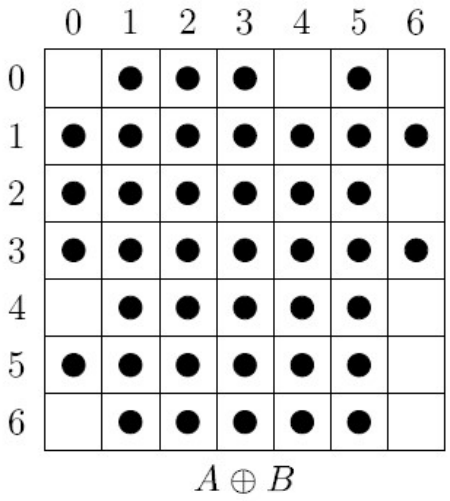


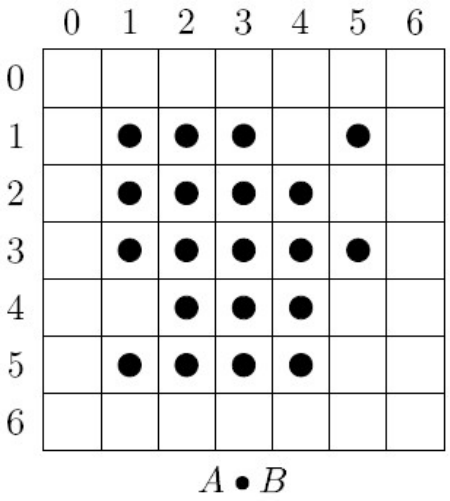
1 1 1
1 1 1
1 1 1

0 1 0
1 1 1
0 1 0

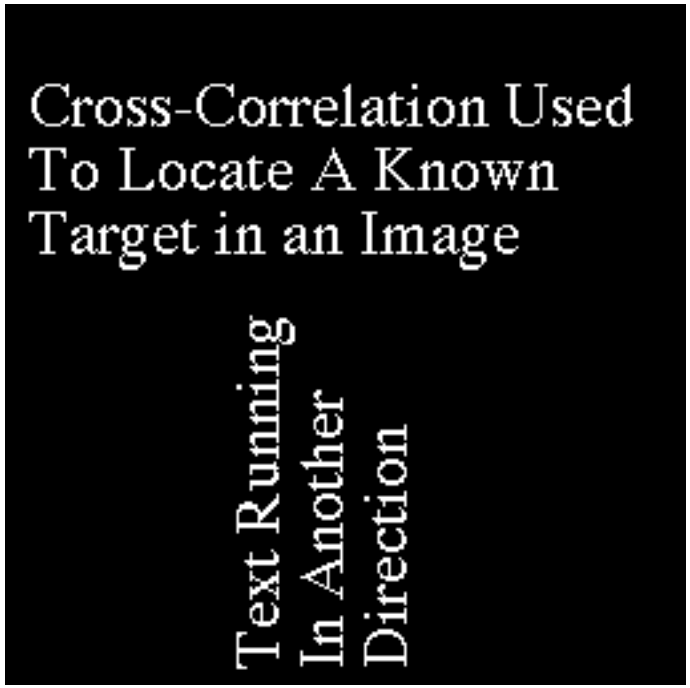
Closing

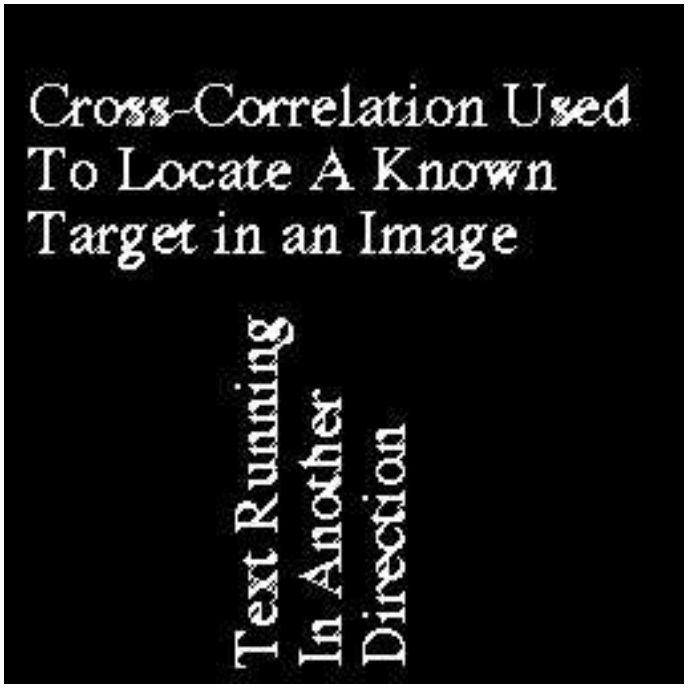






Closing





$$\begin{matrix} 0 & 0 & 1 \\ 0 & 1 & 0 \\ 1 & 0 & 0 \end{matrix}$$

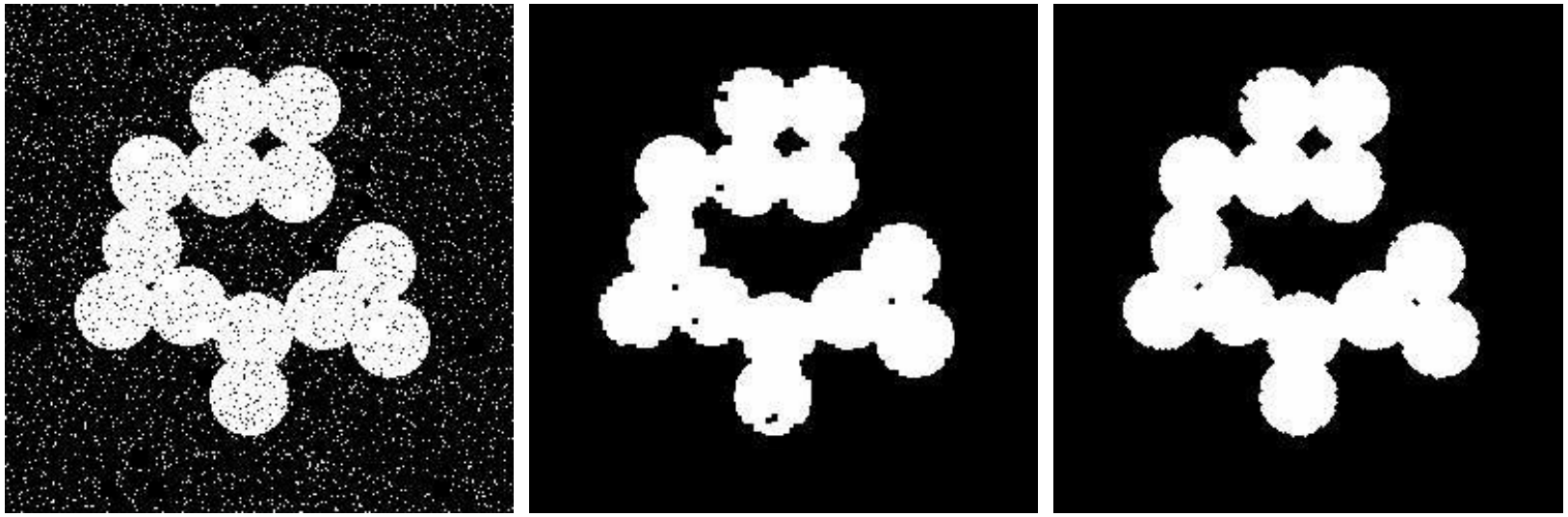
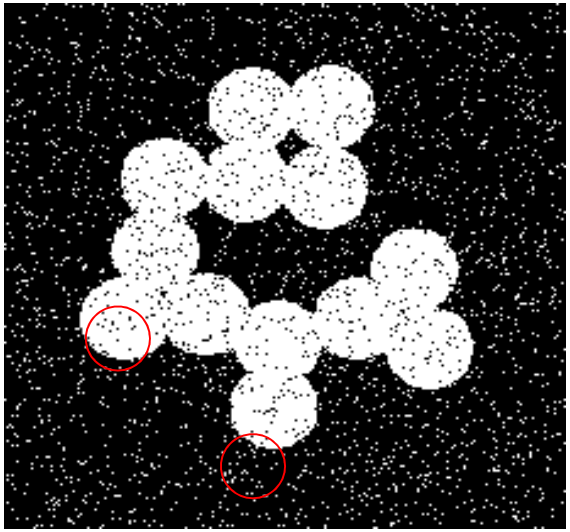
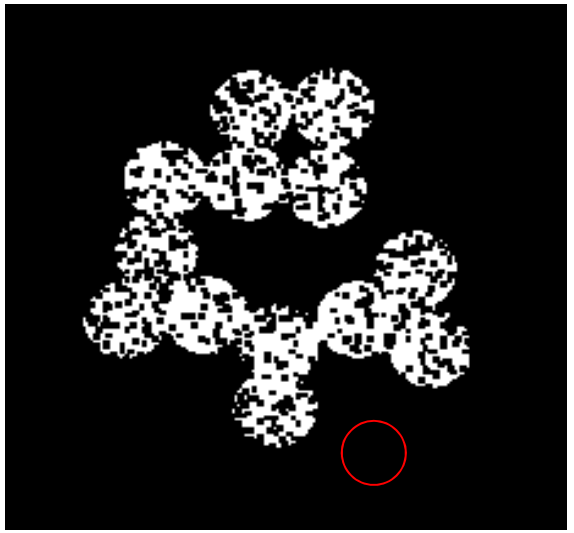
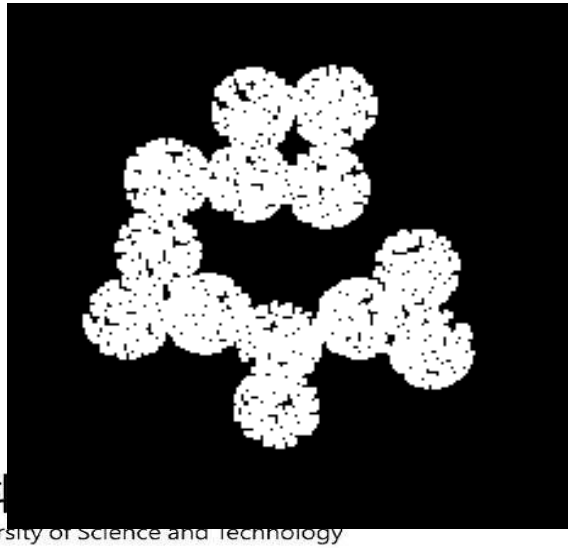
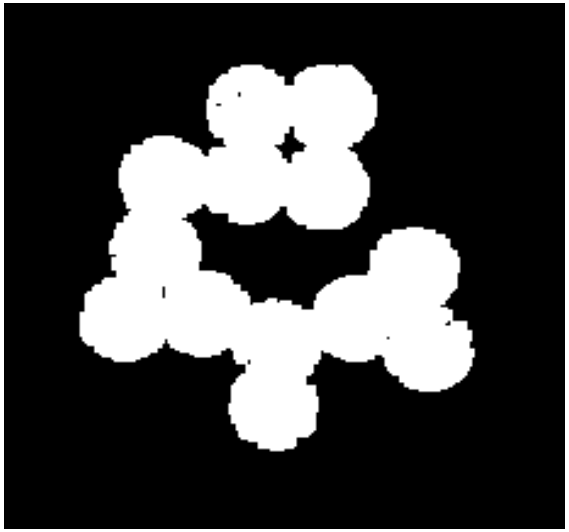
Noise Removal

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

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

$(A \circ B) \bullet B)$

$$\begin{matrix} 1 & 1 & 1 \\ 1 & 1 & 1 \\ 1 & 1 & 1 \end{matrix} \qquad \begin{matrix} 0 & 1 & 0 \\ 1 & 1 & 1 \\ 0 & 1 & 0 \end{matrix}$$



Question