6. Hit-or-Miss Transform

The *hit-or-miss transform* is a natural operation to **select out pixels that have certain geometric properties**, such as **corner points**, **isolated points**, or **border points**, and that performs **template matching, thinning, thickening**, and **centering**.

This transform is accomplished by using **intersections of erosions**.
Let J and K be two structuring elements that satisfy $J \cap K = \emptyset$. Let be **B={J,K}**. **The hit-or-miss transformation of a set A by B is denoted by**
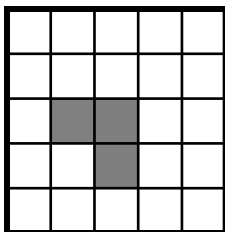$A \circledR B = (A \Theta J) \cap (A^C \Theta K).$

Ex: The hit-or-miss transform used to find **the upper right-hand corner points** of a set A.
The J structuring element locates all pixels of A that have south and est neighbors that are also parts of A. The K structuring element locates all pixels of A^C that have south and est neighbors in A^C. Notice that J and K are displaced from one another. K is J translated by one pixel to the northeast. The pixels that K locates can be thought of as all pixels of A^C that are candidates for being an exterior border pixel to a corner pixel of A.
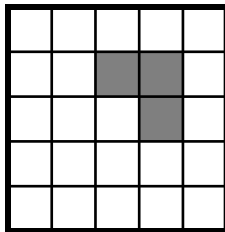
IMAGE PROCESSING

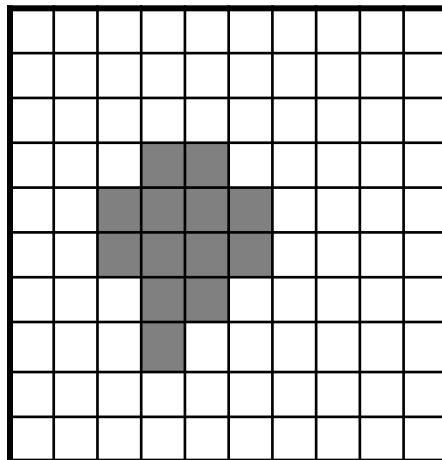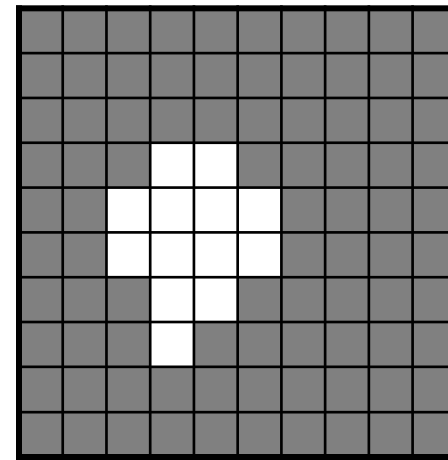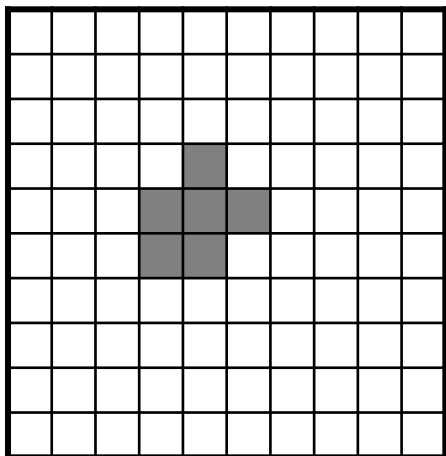# Morphologic Image Processing

J

K

A

A^C

A$\varTheta J$

A$^C\varTheta K$

$A \circledR B = (A \varTheta J) \cap (A^C \varTheta K)$

Technical University of Cluj Napoca

Computer Science Department