



SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107

An Autonomous Institution

Accredited by NBA – AICTE and Accredited by NAAC – UGC with ‘A’ Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

**COURSE NAME : 19EC513 – IMAGE PROCESSING AND COMPUTER
VISION**

III YEAR / V SEMESTER

Unit IV- MORPHOLOGICAL IMAGE PROCESSING

Topic : Dilation and erosion process for gray image application

Dilation and erosion process for binary and gray image application/ 19EC513/ IMAGE PROCESSING AND COMPUTER VISION
/Ms.K.Sangeetha/ECE/SNSCE



DILATION



Dilation in Grayscale Images

Purpose: Dilation adds pixels to the boundaries of objects in an image. In grayscale images, it brightens or enlarges bright regions, making objects appear more pronounced or connected.

How It Works: For each pixel in the image, the maximum pixel value within a specified neighborhood (defined by a structuring element) is chosen and assigned to the central pixel.

Effect: Increases the size of bright regions (e.g., white or lighter areas in the image) and fills small holes or gaps. It's useful for enhancing small or fragmented features in an image.

Applications:

Bridge Gaps: Useful for connecting disconnected components.

Highlight Bright Regions: Enhances lighter parts of an image, making it easier to detect certain features.

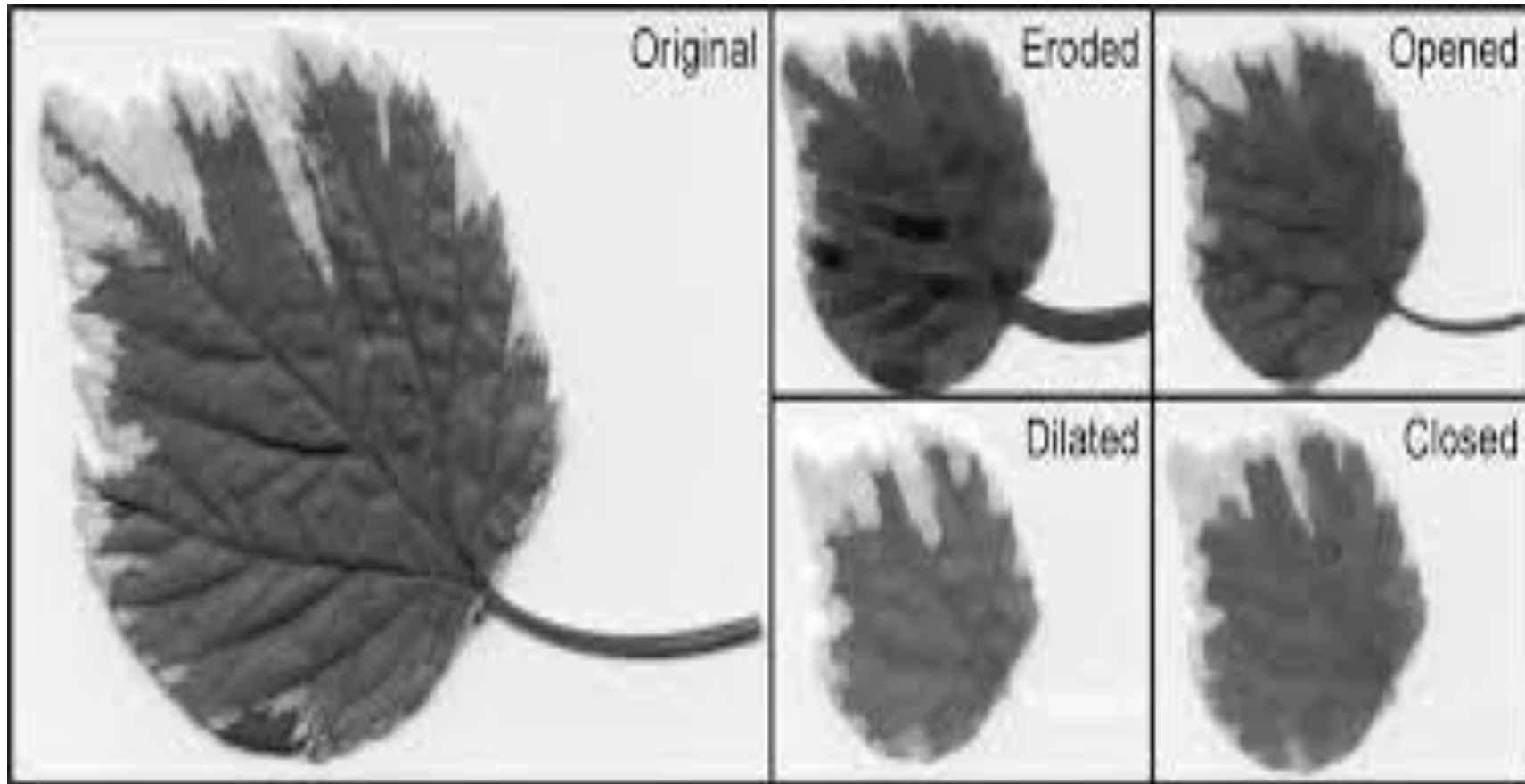
Image Smoothing: Smooths boundaries and fills small holes in bright regions.



EROSION



- Purpose:** Erosion removes pixels from the boundaries of objects. In grayscale images, it reduces the size of bright regions and darkens them, effectively "shrinking" or "eroding" these areas.
- How It Works:** For each pixel, the minimum pixel value within the neighborhood (defined by a structuring element) is chosen and assigned to the central pixel.
- Effect:** Decreases the size of bright regions and emphasizes dark features by expanding dark areas. It's useful for removing small, bright noise and separating connected objects.



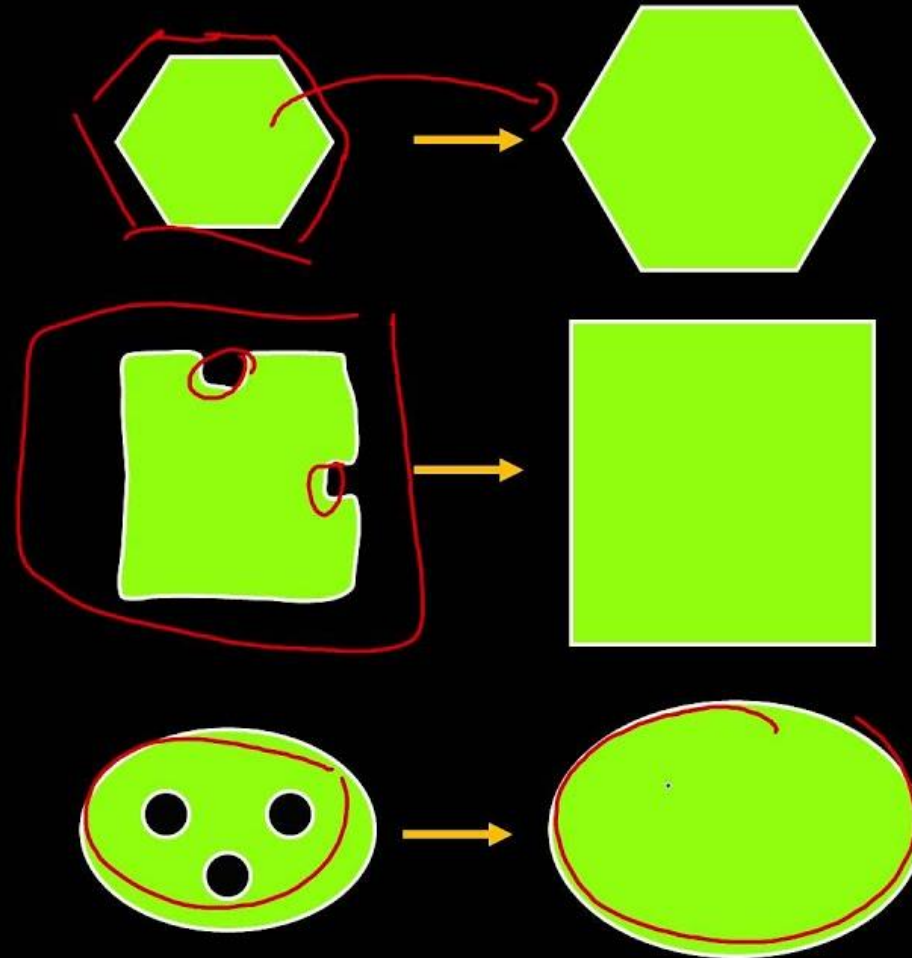
©

Dilation

Dilation **expands** the connected sets of 1s of a binary image.

It can be used for:

- Growing features
- Filling holes and gaps

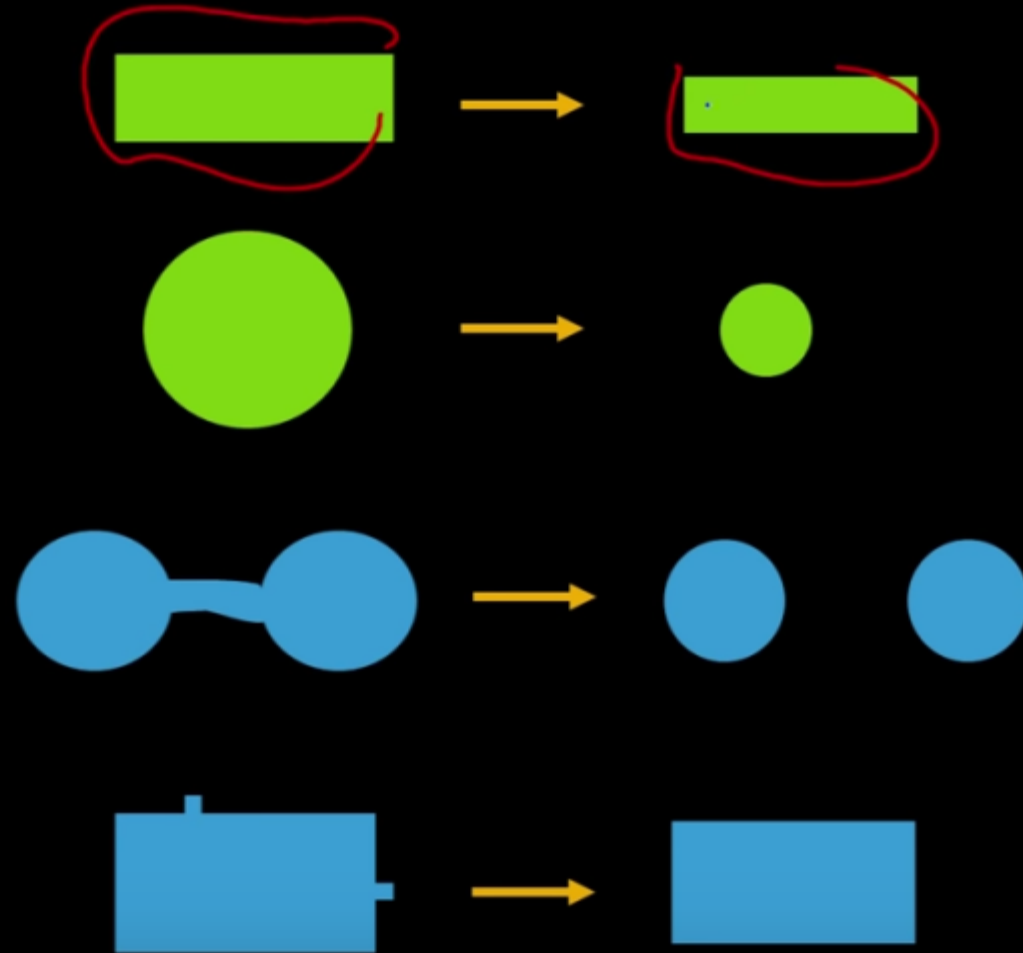


Erosion

Erosion **shrinks** the connected sets of 1s of a binary image.

It can be used for:

- Shrinking features
- Removing bridges, branches, protrusions





THANK YOU !!!