



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 : Basic concept, Dilation process for binary and gray image



Dilation and Erosion are basic morphological processing operations that produce contrasting results when applied to either gray-scale or binary images.

Dilation:

Dilation is the reverse process with regions growing out from their boundaries.

Erosion:

Erosion involves the removal of pixels at the edges of the region.

Both dilation and erosion are produced by the interaction of a set called a structuring element (SE).



Difference between Dilation and Erosion:

Dilation

It increases the size of the objects.

It fills the holes and broken areas.

It connects the areas that are separated by space smaller than structuring element.

It increases the brightness of the objects.

Distributive, duality, translation and decomposition properties are followed.

It is XOR of A and B.

It is used prior in Closing operation.

It is used later in Opening operation.

Erosion

It decreases the size of the objects.

It removes the small anomalies.

It reduces the brightness of the bright objects.

It removes the objects smaller than the structuring element.

It also follows the different properties like duality etc.

It is dual of dilation.

It is used later in Closing operation.

It is used prior in Opening operation.



Morphology is known as the broad set of image processing operations that process images based on shapes. It is also known as a tool used for extracting image components that are useful in the representation and description of region shape.

The basic morphological operations are:

- Erosion
- Dilation

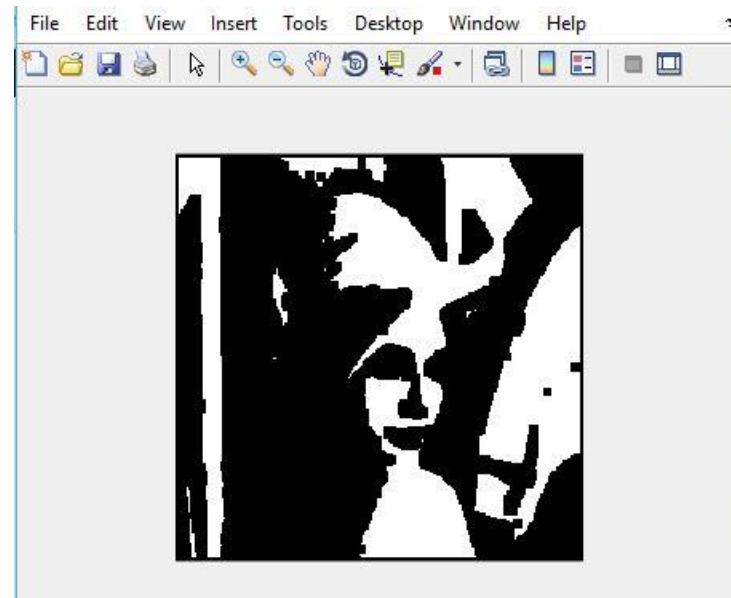
In this, we will be discussing Erosion.

Erosion:

- Erosion shrink-ens the image pixels i.e. it is used for shrinking of element A by using element B.
- Erosion removes pixels on object boundaries.:
- The value of the output pixel is the minimum value of all the pixels in the neighborhood. A pixel is set to 0 if any of the neighboring pixels have the value 0.

Approach:

- Read the RGB image.
- Using function `im2bw()`, convert the RGB image to a binary image.
- Create a structuring element or you can use any predefined mask eg. `special('sobel')`.
- Store the number of rows and columns in an array and loop through it.
- Create a zero matrix of the size same as the size of our image.
- Leaving the boundary pixels start moving the structuring element on the image and start comparing the pixel with the pixels present in the neighborhood.
- If the value of the neighborhood pixel is 0, then change the value of that pixel to 0.





THANK YOU !!!