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Experiment 6: Morphological Operations

Aim:- To apply erosion and dilation morphological operations on digital image.

Apparatus: PC/Laptop, MATLAB software and few Images

Theory:

Erosion is one of the two basic operators in the area of mathematical morphology, the other being dilation.

It is typically applied to binary images, but there are versions that work on grayscale images. The basic effect of the operator on a binary image is to erode away the boundaries of region of foreground pixels. Thus areas of foreground pixels shrink in size, and holes within those areas become larger. The erosion operator takes two pieces of data as inputs. The first is the image which is to be eroded. The second is a set of co-ordinate points known as structuring element. It is this structuring element that determines the precise effect of the erosion on the input image.

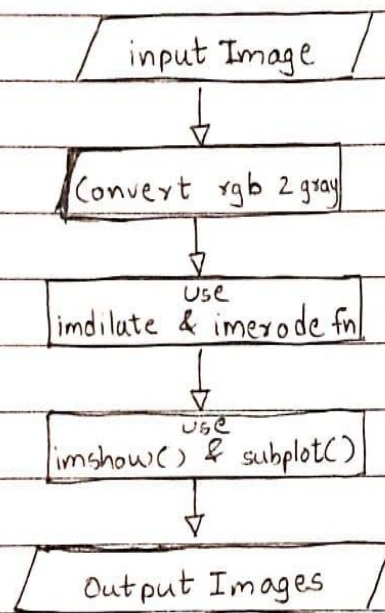
Dilation is the other operator of the two basic operators in the area of mathematical morphology, the other being erosion. It is typically applied to binary images, but there are versions that work on grayscale images. The basic effect of the operator on a binary image is to gradually enlarge the boundaries of regions of foreground pixels. Thus areas of foreground pixels grow in size while holes within those region become smaller. The dilation

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operator takes two pieces of data as inputs. The first is the image which is to be dilated. The second is a set of co-ordinate points known as a structuring element. It is this structuring element that determines the precise effect of the dialation on the input image.

Flowchart and algorithm:-



Coding and Output:

```
1 % Vighnesh Vikas Salgaonkar | B-21 | TY-EXTC
2 - clc;
3 - close all;
4 - clear all;
5
6 - org_img = imread('IPMV1.jpg');
7 - bw_d = im2bw(rgb2gray(org_img));
8 - se = strel('square', 18);
9 - dilate_img = imdilate(bw_d, se);
10 - erode_img = imerode(dilate_img, se);
11
12 - subplot(221);
13 - imshow(bw_d);
14 - title('Dilate I/P');
15
16 - subplot(222);
17 - imshow(dilate_img);
18 - title('Dilate Image');
19
20 - subplot(223);
21 - imshow(bw_d);
22 - title('Dilate I/P');
23
24 - subplot(224);
25 - imshow(erode_img);
26 - title('Eroded Image');
```

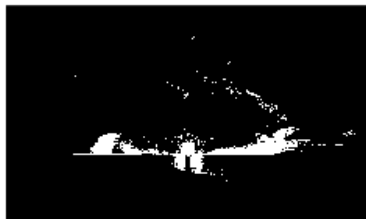
Dilate I/P



Dilate Image



Dilate I/P



Eroded Image



Conclusion: Thus, I conclude that, I have studied, understood and performed the practical based on erosion and dilation morphological operations on digital image.