Tuesday, December 28, 2021 5:46 AM

Common Steps between both Filters: Alpha,Adaptive :

1- Get The ImgMaterix2d Array

2-make nested loop to get Each Pixel in the 2darray

3-Check if This Pixel Can be Starting Point of An Window of Size ,if no get next pixel, How to check?

If pixel at (y,x) can be initial pixel for creating a window
Then these Condition Must Exsit
initial X +(windowSize-1) < img.Width
initial Y +(windowSize-1) < img.Hight

4 -get y,x of the center pixel of selctedWindow , How ?

To Pick Center:
Int CenterpixelY = CurrentpixelY + winSize/2
Int CenterpixelX= CurrentpixelX + winSize/2

5- get the items inside the windowSize , How ?

To Pick All Item in window:
1)create 1d array to append values inside it
2)Since we have the initial y, initial x for example let our current pixel be the first pixel , then yi =0,xi=0
We need to make nested loop to get these values in the 2darray and append them in our 1darray
ImgMatrix[0,0] ImgMatrix [0,1] ImgMatrix [0,2]
ImgMatrix[1,0] ImgMatrix [1,1] ImgMatrix [1,2]
ImgMatrix[1,0] ImgMatrix [1,1] ImgMatrix [1,2]

6- Sort the array using any sorting algorithm that Is required

7-Make Some Operation to get a newpixel value

Operation for Alpha Trim Filter:

1) remove Max,Min Values in the Sorted 1d array
2) Calculate ther Average
3) ImageMatrix[CenterpixelY,CenterpixelX] **= Average**

Operation for Adaptive Median Filter:

- ◇ **Save Max,Min and get median of the Sorted 1d array "median = Array[Arr.Count/2]"**
- ◇ **Zxy = ImageMatrix[**CenterpixelY,CenterpixelX]
- ◇ **A1 = median - min , A2 = Max-median**
- ◇ **Check IF median is valid by this conditon IF (A1>0 && A2>0)**
  - – **If not valid then**
    - **Check if (windowsize <= maxsize)**
      - **If not valid then**
        - **ImageMatrix[**CenterpixelY,CenterpixelX] = Median
        - **End**
      - **Else if valid do this**
        - **windowSize =windowSize+2**
        - **repeat From Step3 with new windowSize**

Finally Check Whether Replace the center with the median value, or leave it

- ◇ **B1 = Zxy - min , B2 = Max-Zxy**
- ◇ **Check IF (B1>0 && B2>0)**
  - **If not valid then**
  - **ImageMatrix[**CenterpixelY,CenterpixelX] = Median "**Replace it with median**"
  - **Else if valid do this**
  - **ImageMatrix[**CenterpixelY,CenterpixelX] = Zxy "**Leave it with it's value**"