

CS 7650 – Digital Image Processing

Assignment 7 – Adaptive Median Filtering

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Abstract

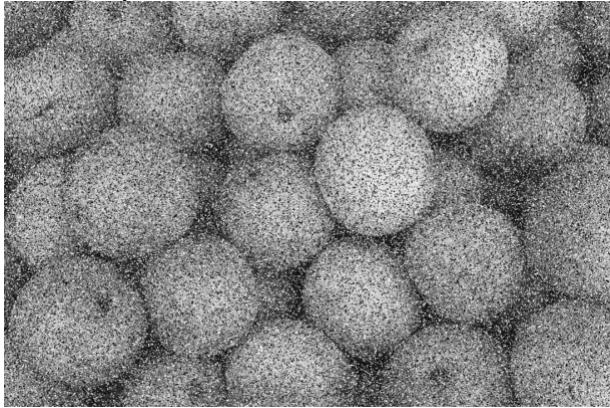
The purpose of this assignment was to gain an understanding of the adaptive median filter by implementing it for window sizes 3x3 to 21x21.

PART A

Implement the adaptive median filter covered in class for removing a high percentage of salt-and-pepper or impulse noise.

Input Image

Pears 30pNoise.tif



Output

3x3



5x5



7x7



21x21

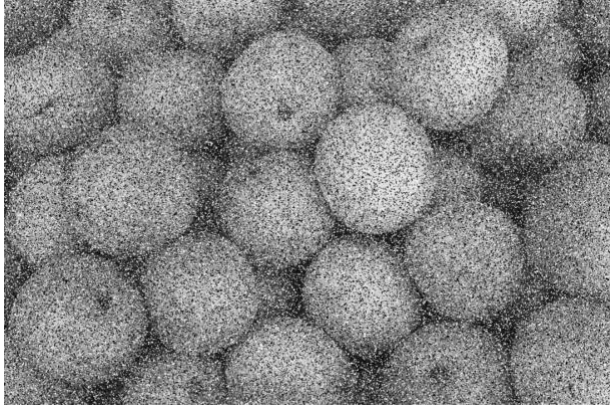


PART B

Provide timing results for each window size of the full adaptive median filter on one of the large images.

Input Image

Pears 30pNoise.tif



Output

3x3

The Adaptive Median Filter took 48.0254 seconds for this image!

5x5

The Adaptive Median Filter took 54.8390 seconds for this image!

7x7

The Adaptive Median Filter took 50.8867 seconds for this image!

21x21

The Adaptive Median Filter took 65.1979 seconds for this image!

PART C

How would you speed up your implementation of the adaptive median filter?

To speed up this algorithm I would use histograms to get to $O(W)$ time. This would use the bucket sorting algorithm. You could also use bilateral filtering which performs at $O(1)$.