CS3712 - Image Processing

Noise filter implementation results

Index No: 190290U

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1. Mean filter

Function: `applyMeanFiltering(image, kernelSize)`

Parameters:

- `image`: The matrix representation of the input image
- `kernelSize`: The number of rows or columns of the kernel (preferably an odd number)

returns: The matrix representation of the output image

Original image:

Result when `kernelSize` = 3

Result when `kernelSize` = 5

Result when `kernelSize` = 7

2. Median filter

Function: `applyMedianFiltering(image, kernelSize):`

Parameters:

- `image`: The matrix representation of the input image
- `kernelSize`: The number of rows or columns of the kernel (preferably an odd number)

returns: The matrix representation of the output image

Original image:

Result when `kernelSize` = 3

Result when `kernelSize` = 5

Result when `kernelSize` = 7

3. K-closest averaging filter

Function: `applyKClosetAveraging(image, kernelSize, K)`

Parameters:

- `image`: The matrix representation of the input image
- `kernelSize`: The number of rows or columns of the kernel (preferably an odd number)
- `K`: The K value which determines the effective number of elements in the kernel that is considered (Should be less than or equal to square of `kernelSize`)

returns: The matrix representation of the output image

Original image:

Result when `kernelSize`=5 and `K`=23

Result when `kernelSize`=5 and `K`=8

4. Threshold averaging filter

Function: `applyThresholdAveraging(image, kernelSize, T)`

Parameters:

- `image`: The matrix representation of the input image
- `kernelSize`: The number of rows or columns of the kernel (preferably an odd number)
- `T`: The threshold value (0 < T < 255)

returns: The matrix representation of the output image

Original image:

Result when `kernelSize`=5 and `T`=25

Result when `kernelSize`=5 and `T`=210