

Deep Learning –HW#1

About the Assignment

The main aim of the assignment is to gain some fundamental knowledge about image processing on Python. Assuming that you are given a sample peppers image as shown in Fig. 1.



Fig. 1: Original image.

Tasks:

Apply 2D median filtering to remove noise from images. You are expected convert this matlab code line by line in Python.

```
%READ THE RGB IMAGE
I = imread('peppers.png');
A = imnoise(I, 'Salt & pepper', 0.1);
figure, imshow(A); title('IMAGE WITH SALT AND PEPPER NOISE');

%DEFINE THE WINDOW SIZE MXN
M=3;
N=3;

%PAD THE MATRIX WITH ZEROS ON ALL SIDES
modifyA=padarray(A, [floor(M/2), floor(N/2)]);

B = zeros([size(A,1) size(A,2)]);
med_indx = round((M*N)/2); %MEDIAN INDEX
for i = 1:size(modifyA,1)-(M-1)
    for j = 1:size(modifyA,2)-(N-1)
        temp = modifyA(i:i+(M-1), j:j+(N-1), :);
        %RED, GREEN AND BLUE CHANNELS ARE TRAVERSED SEPARATELY
        for k = 1:3
            tmp = temp(:, :, k);
            B(i, j, k) = median(tmp(:));
        end
    end
end

%CONVERT THE IMAGE TO UINT8 FORMAT.
B = uint8(B);
figure, imshow(B);
title('IMAGE AFTER MEDIAN FILTERING');
```

For imnoise function you can use the following code:

```
from skimage.util import random_noise  
sp = random_noise(I, mode='s&p', seed=None, clip=True)
```

IMAGE WITH SALT AND PEPPER NOISE



IMAGE AFTER MEDIAN FILTERING



- finally, displays input and output images

Send your code as zip. Yourname-surname.zip