

CS 663 : Assignment-2

3)

Applying patch based filter on corrupted image

Code is written in python

Libraries used are numpy,matplotlib,hdf5storage

HDF5 library is used to read mat files.

Matplotlib used to open,show and save images

Numpy used in array manipulation and calculation of random noise that needed to be added.

Barbara Image:--



Original Image



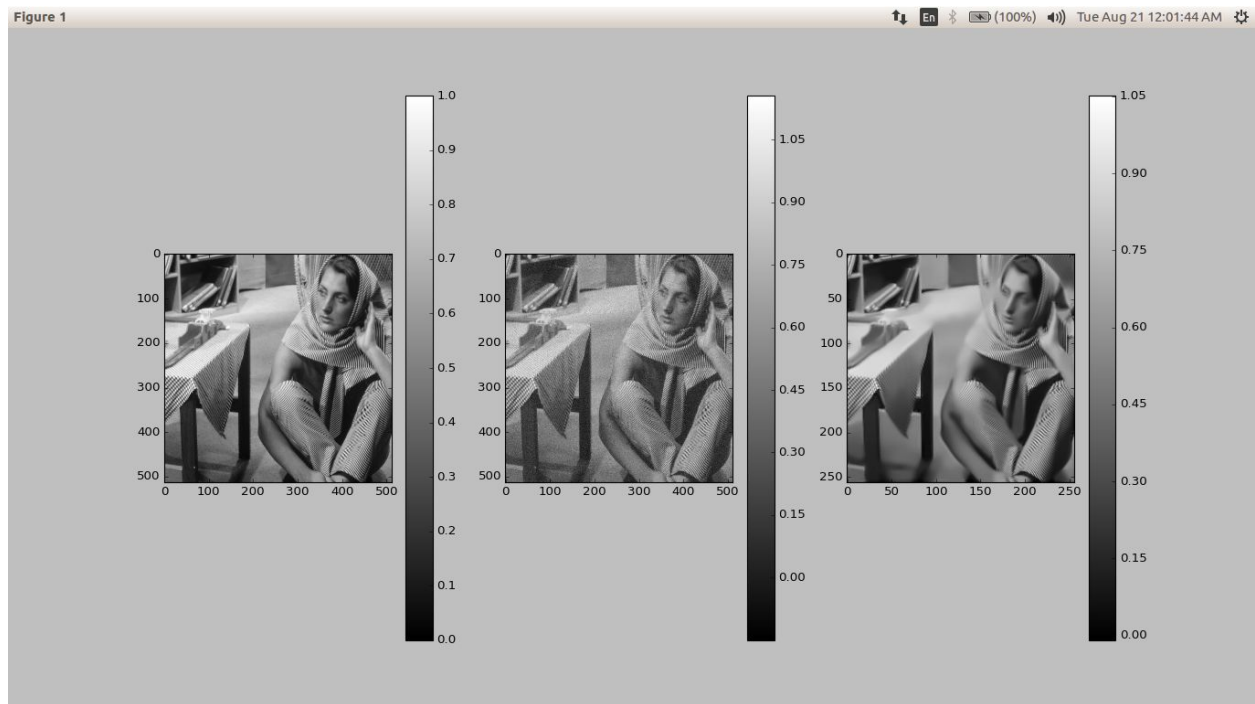
Noisy Image



Patch-Based filtered image

Best RMS value achieved is 0.060774 at $\sigma_{\text{space}}=0.5$
At 0.9 σ_{space} , RMS = 0.06765

Color Map

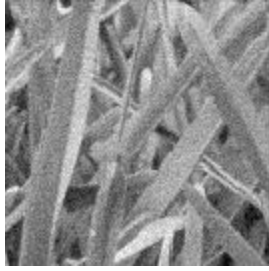


Left to Right: Original, Noisy, Filtered

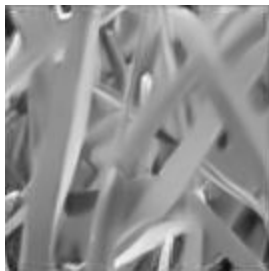
b) Grass Image



Original Image



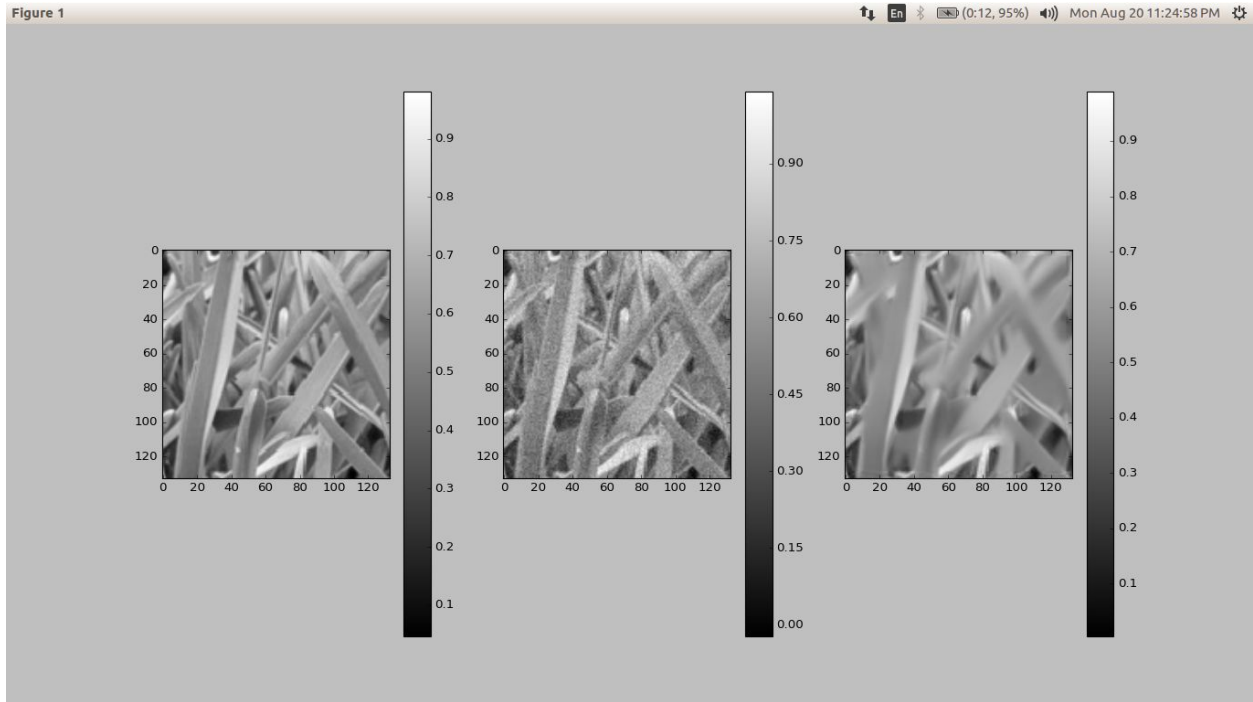
Noisy Image



Patch-Based filtered image

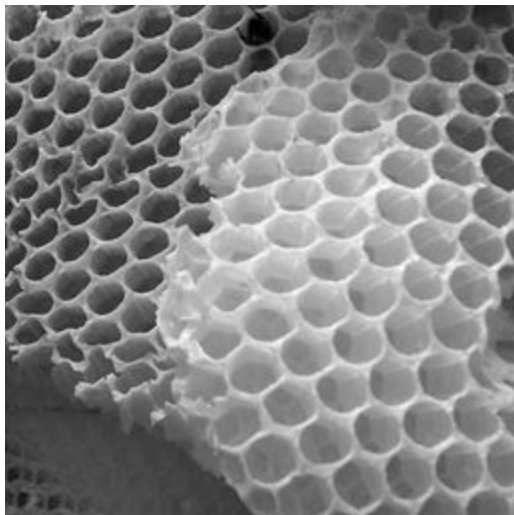
Best RMS value achieved is 0.04244 at $\sigma_{\text{space}}=5$ and $\sigma_{\text{intensity}}=5$
at $0.9 \cdot \sigma_{\text{space}}$ RMS = 0.04257

Color Map:--

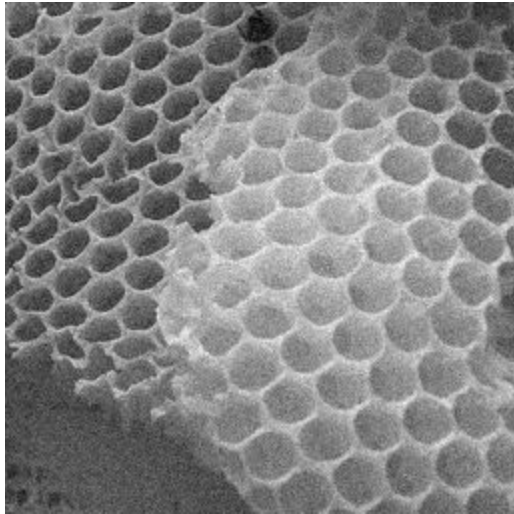


Left to Right: Original, Noisy, Filtered

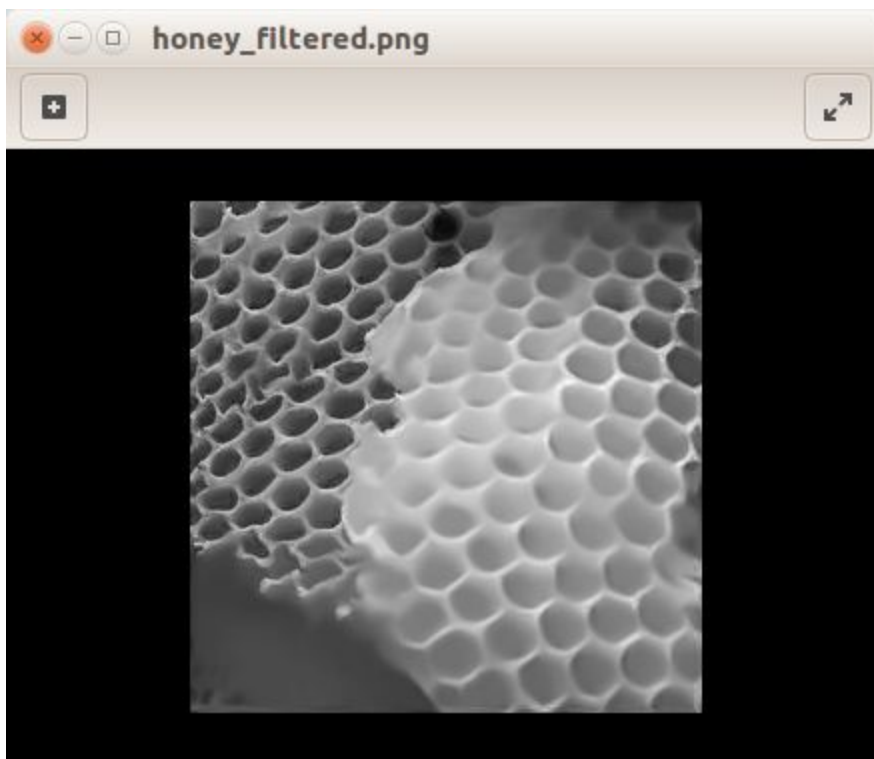
c) Honey Comb



Original Image



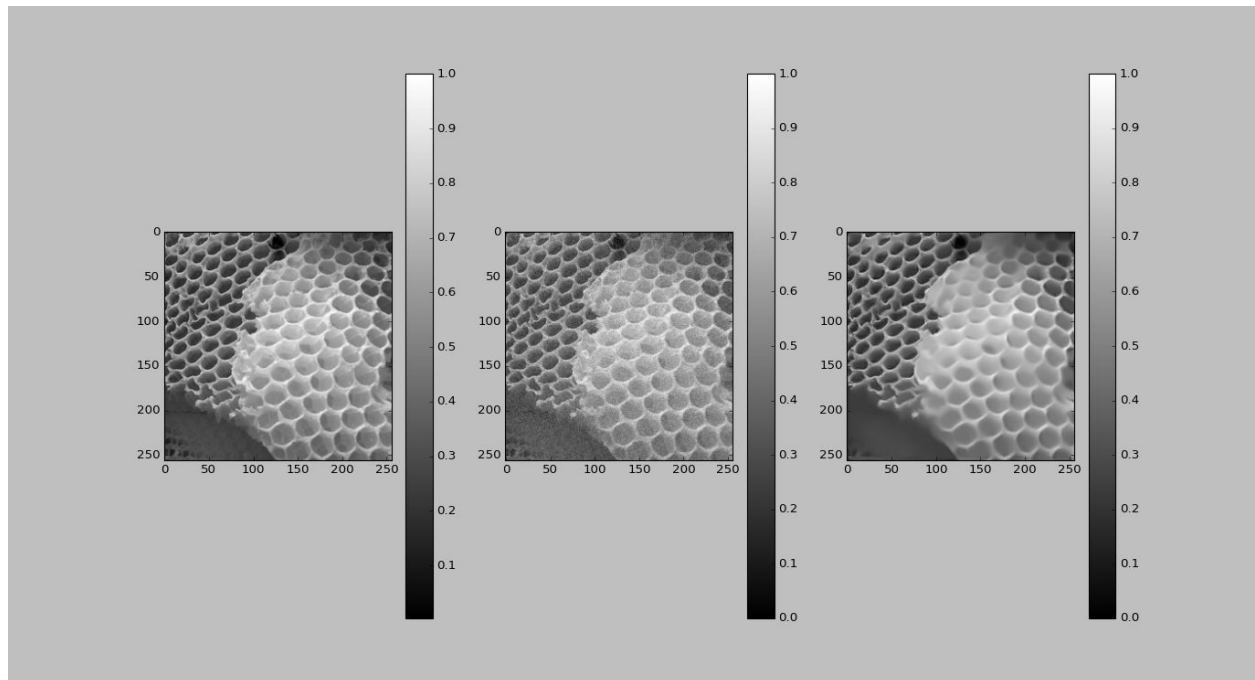
Noisy Image



Patch-Based filtered image

Best RMS value achieved is 0.04635 at $\sigma_{\text{space}}=0.5$
At $0.9 \cdot \sigma_{\text{space}}$, RMS = 0.04546

Color Map:--



Left to Right: Original, Noisy, Filtered