DIP

Assignment 2

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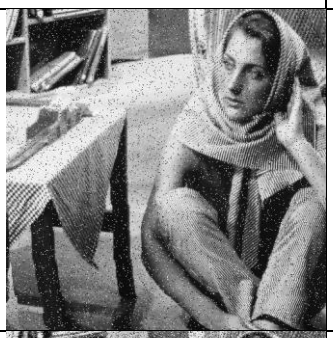
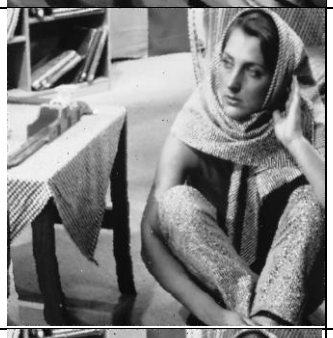
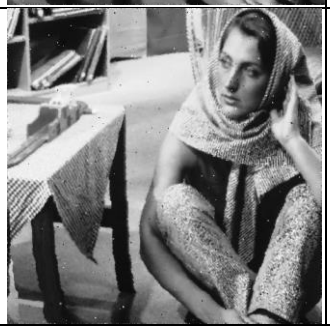
Q1. On the Barbara image you have to simulate salt and pepper noise. Then you have to implement the median filter to denoise it. Then you need to compute the Peak Signal to Noise Ratio (PSNR) between the clean image and denoised image.

Images need to be embedded in the following table. You will need to specify the best window size for each level of noise.

Noisy Image	Noisy Image [embed]	Best Denoised Image [embed]	PSNR	Parameter(s) of median filter for best denoising
5% corrupted pixels			32.85325699255325	3X3
15% corrupted pixels			32.472738356533604	3X3
20% corrupted pixels			32.29973307798793	3X3

25% corrupted pixels			32.130358195104684	3X3

5 marks

Q2. Take the cameraman image. Now reduce its size by 16 times, i.e. if the original image is 256x256, your reduced image should be 64x64. Your task is to super-resolve the 64x64 image by 16 times.

This question is kept intentionally open ended. Try out 5 interpolation kernels (e.g. nearest neighbour, linear, splines etc.) from the class notes to get the best results. You can compare the results based on PSNR between the original 256x256 image and the super-resolved image.

Interpolation Kernel	PSNR	Embed super-resolved Image
NN	33.382397878982474	

BiLinear	33.50661593085354	
Bell	33.02781205529574	

Hermite	33.79011235953498	
Lanczos	32.84979943379026	

5 marks