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MyMainScript

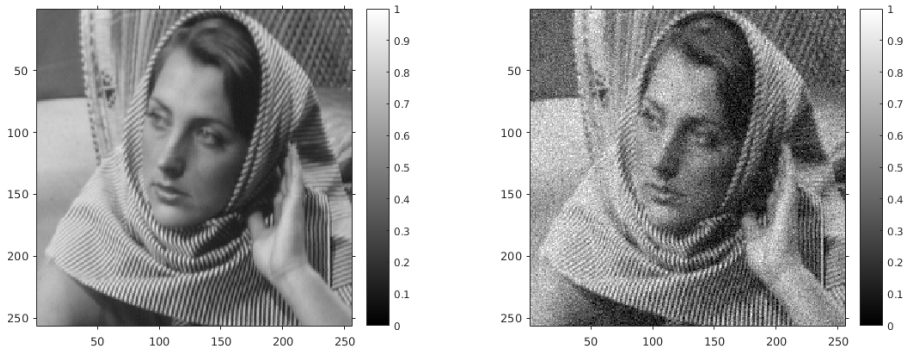
```
tic;
```

Load Input, Add noise

```
sigma = 20;
img = double(imread('../data/barbara256.png'));
img1 = img + randn(size(img))*sigma;
mse_error_orig = sqrt(immse(img, img1))
handles.H = figure('units','normalized','outerposition',[0 0 1 1]);
subplot(1,2,1)
imshow(img/255)
axis on, colorbar
subplot(1,2,2)
imshow(img1/255)
axis on, colorbar, waitforbuttonpress
```

```
mse_error_orig =

   20.0433
```



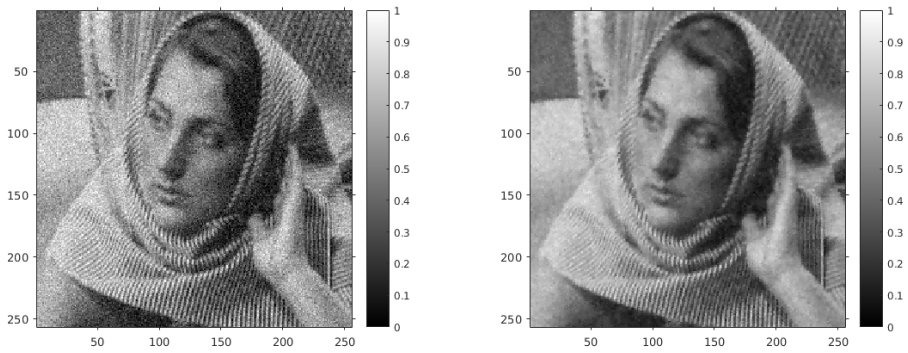
Bilateral Filtering

After a grid-search of about 100 settings, we obtained - w = 4, sigma_spatial = 1.2, sigmal_intensity = 43

```
close(handles.H)
img2 = myBilateralFiltering(img1, 4, 1.2, 43);
mse_error_bilateral = sqrt(immse(img, img2))
handles.H = figure('units','normalized','outerposition',[0 0 1 1]);
subplot(1,2,1)
imshow(img1/255)
axis on, colorbar
subplot(1,2,2)
imshow(img2/255)
axis on, colorbar, waitforbuttonpress
```

```
mse_error_bilateral =

   11.4063
```

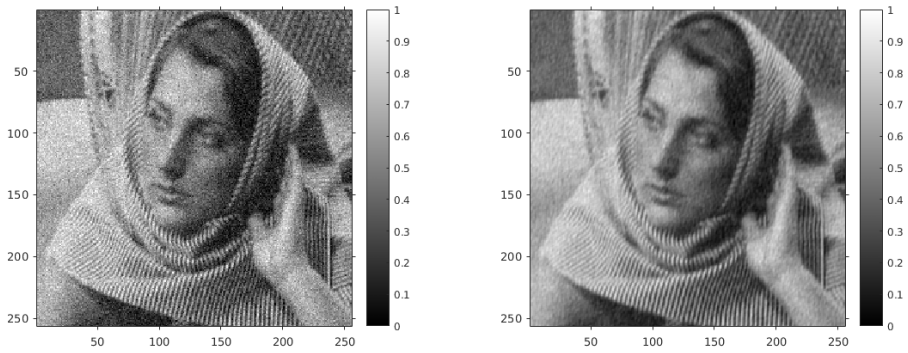


PCA Denoising - 1

```
close(handles.H)
img2 = myPCADenoising1(img1, sigma);
mse_error_pca = sqrt(immse(img, img2))
handles.H = figure('units','normalized','outerposition',[0 0 1 1]);
subplot(1,2,1)
imshow(img1/255)
axis on, colorbar
subplot(1,2,2)
imshow(img2/255)
axis on, colorbar, waitforbuttonpress
```

```
mse_error_pca =

    9.7986
```



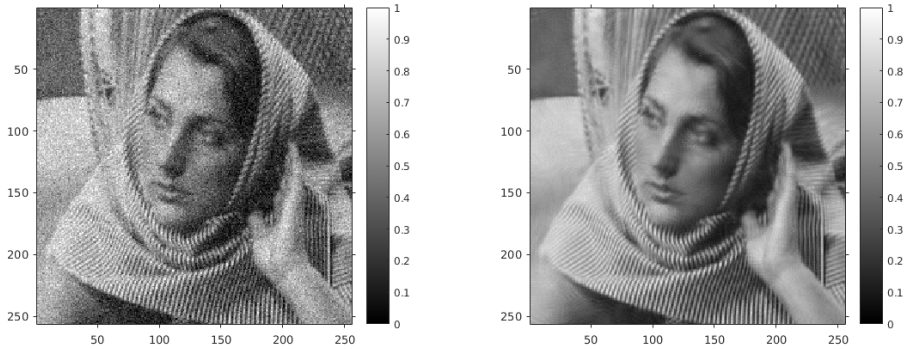
PCA Denoising - 2

```
close(handles.H)
img2 = myPCADenoising2(img1, sigma);
mse_error_pca2 = sqrt(immse(img, img2))
handles.H = figure('units','normalized','outerposition',[0 0 1 1]);
subplot(1,2,1)
imshow(img1/255)
axis on, colorbar
subplot(1,2,2)
imshow(img2/255)
axis on, colorbar, waitforbuttonpress
toc;
```

```
mse_error_pca2 =

    7.7878

Elapsed time is 310.842469 seconds.
```



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