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EENG 860 Special Topics: Digital Image Processing Project 2

RESULTS

Gaussian Blur

Original Image   Gaussian Blurred Image Gaussian Blurred Noisy Image

FIF result PSNR 13.9086 WF result   NSR 0.16913 PSNR 16.8264 CLS Result Noise Power 2621.44 PSNR 14

Linear Blur

Original Image   **Linear Motion Blurred Image**   **Linear Motion Blurred Noisy Image**

FIF result PSNR 14.8088   **WF result   NSR 0.1691 LS result 14.3203 BLS result Noise Power 2621.44 PSNR 14**

Non Linear Blur

Original Image   **Non Linear Motion Blurred Image**   **Non Linear Motion Blurred Noisy Image**
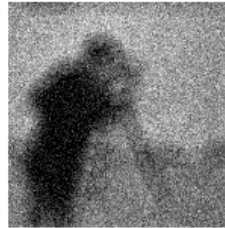
FIF result PSNR 19.173 WF result   NSR0.1691 LS result 18.9288 BLS result Noise Power2621.44 PSNR 14
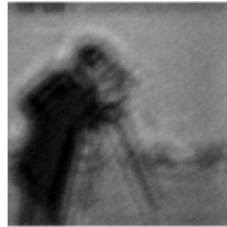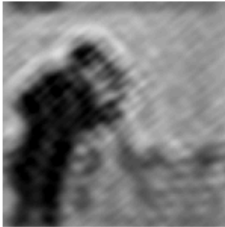
Filter Inverse Filter

The filter inverse filter has been implemented by writing the algorithm on its own. Various value of Do has been tested.

From this we can verify that increasing the value of Do increases the PSNR, however, the the picture loses the sharpness and becomes increasingly smooth i.e less details. Therefore an intermediate value of Do is selected for results which shows images with more details.

Wiener Filtering

The filter has been implemented using the 'deconvwnr', function of MATLAB. To estimate the correct value of K we have used Noise to Signal Ratio.

CLSF Filtering

The filter has been implemented using the 'deconvreg'; function of MATLAB. To estimate the correct value of Laplacian the algorithm needs the noise power which has been calculated and entered.

Conclusion

From the results we can observe that Wiener Filter has been generally better at Restoring the Images. Despite the fact that CLSF filter has higher PSNR Values. However, the details are also lost in CLSF and aesthetically images with Wiener Filter are much better.