Locally Weighted Least Squares Regression for Image Denoising, Reconstruction and Up-Sampling
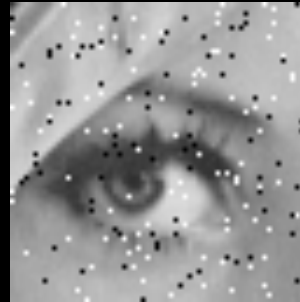
Moritz Baecher

Goal

Image Denoising

Image Upsampling
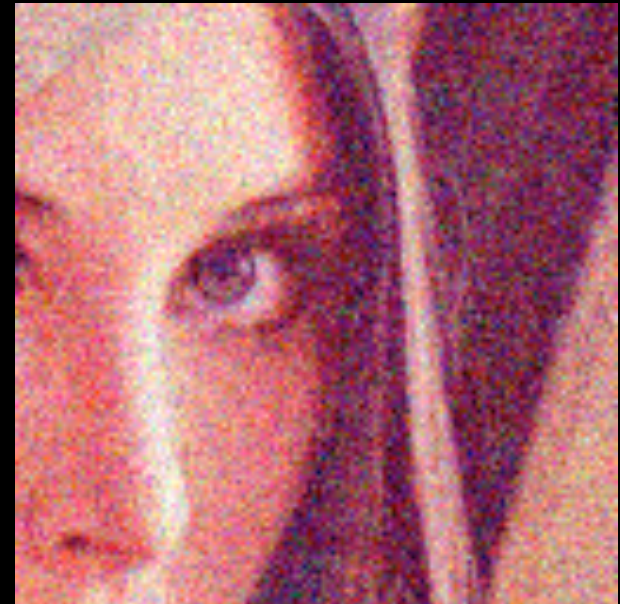
Image Reconstruction

Denoising: Higher Order Bilateral Filters
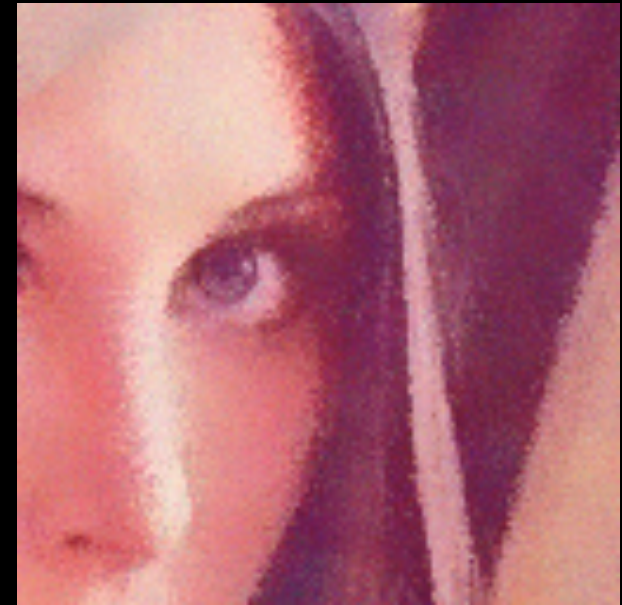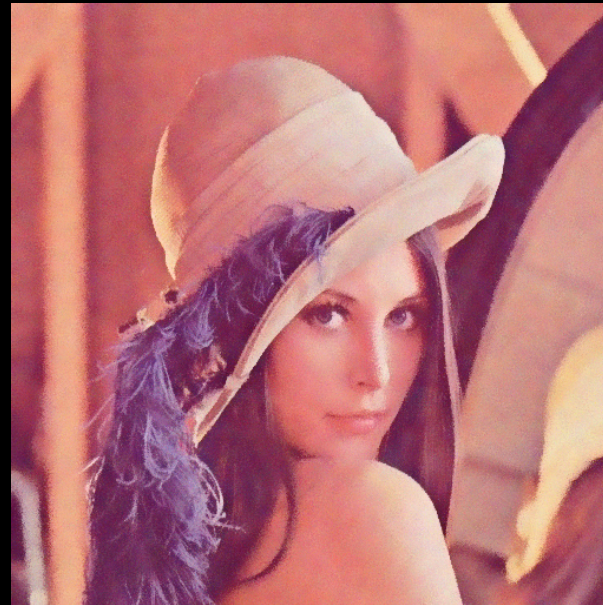
original

noise

[SNR = 20.2 dB]

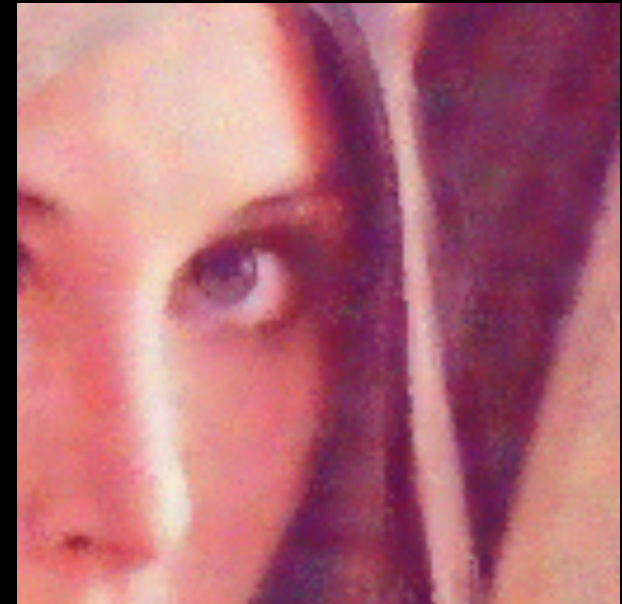# Denoising: Higher Order Bilateral Filters

order: 0

[SNR = 28.1 dB]
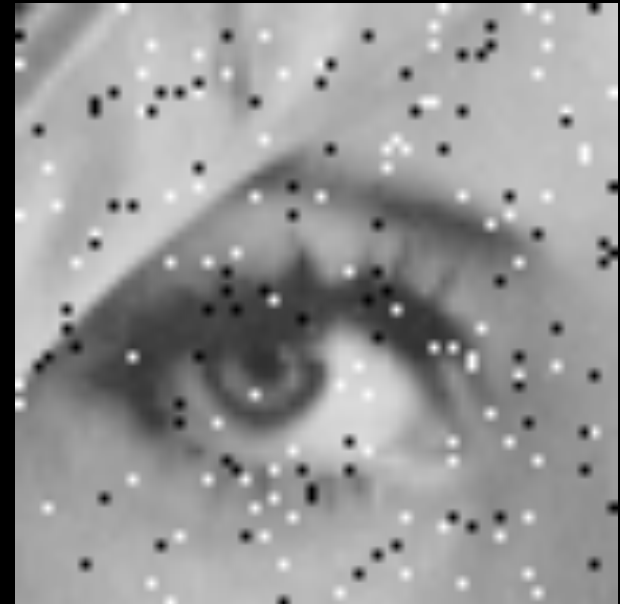
order: 2

[SNR = 28.3 dB]
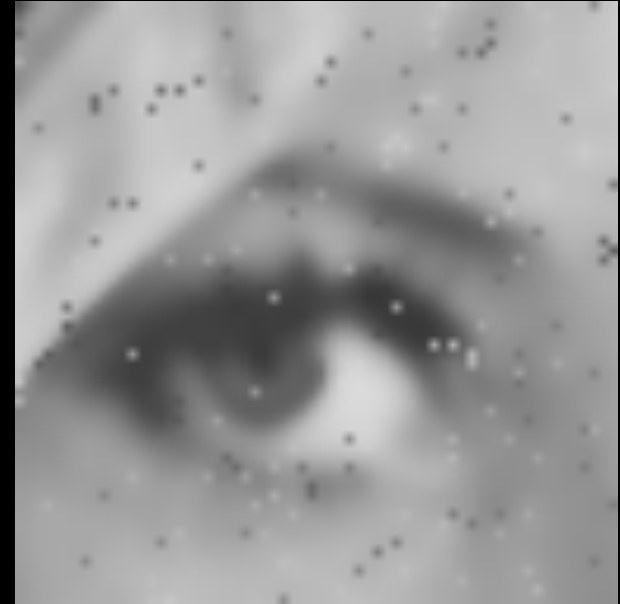
Denoising: Robust Filtering

original

noise

[SNR = 18.4 dB]

Denoising: Robust Filtering
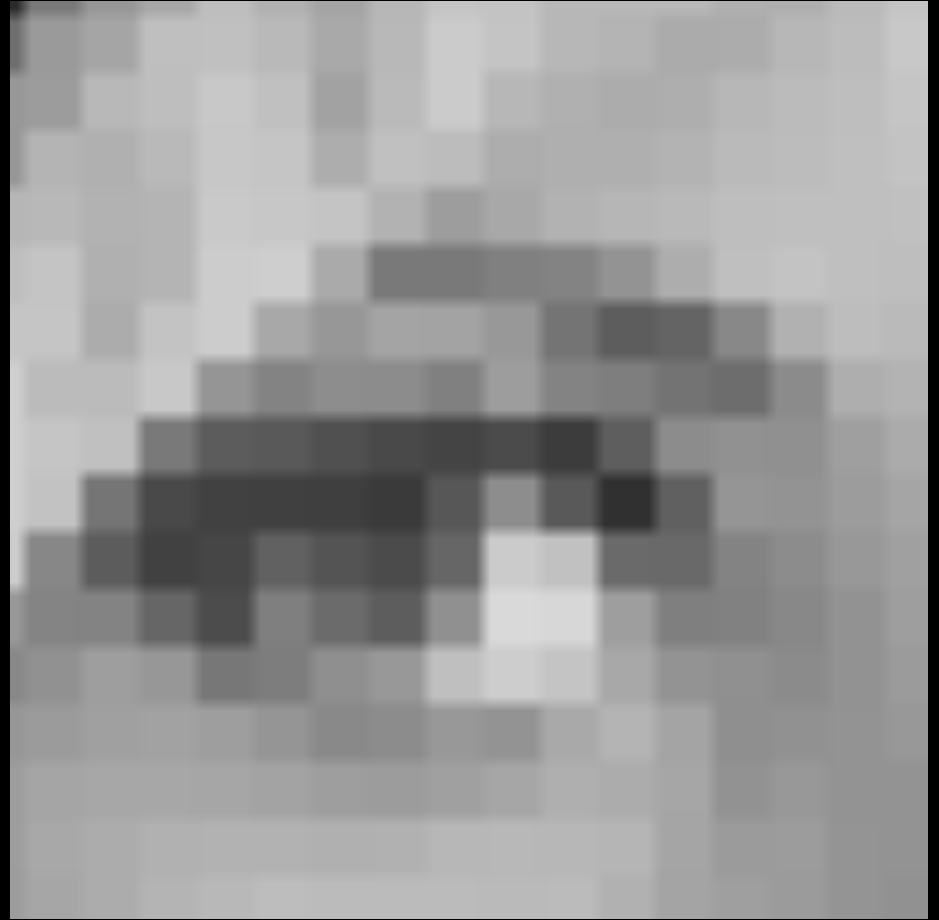
bilateral

[SNR = 26.3 dB]

robust

[SNR = 31.5 dB]

Upsampling

original

down-sampled
by factor 4

Upsampling

original

up-sampled
by factor 4

Reconstruction

85 % of
pixels
removed

Reconstruction