Sparse Coding Minimizing ℓ_0: Denoising

Mathematical Models and Methods for Image Processing

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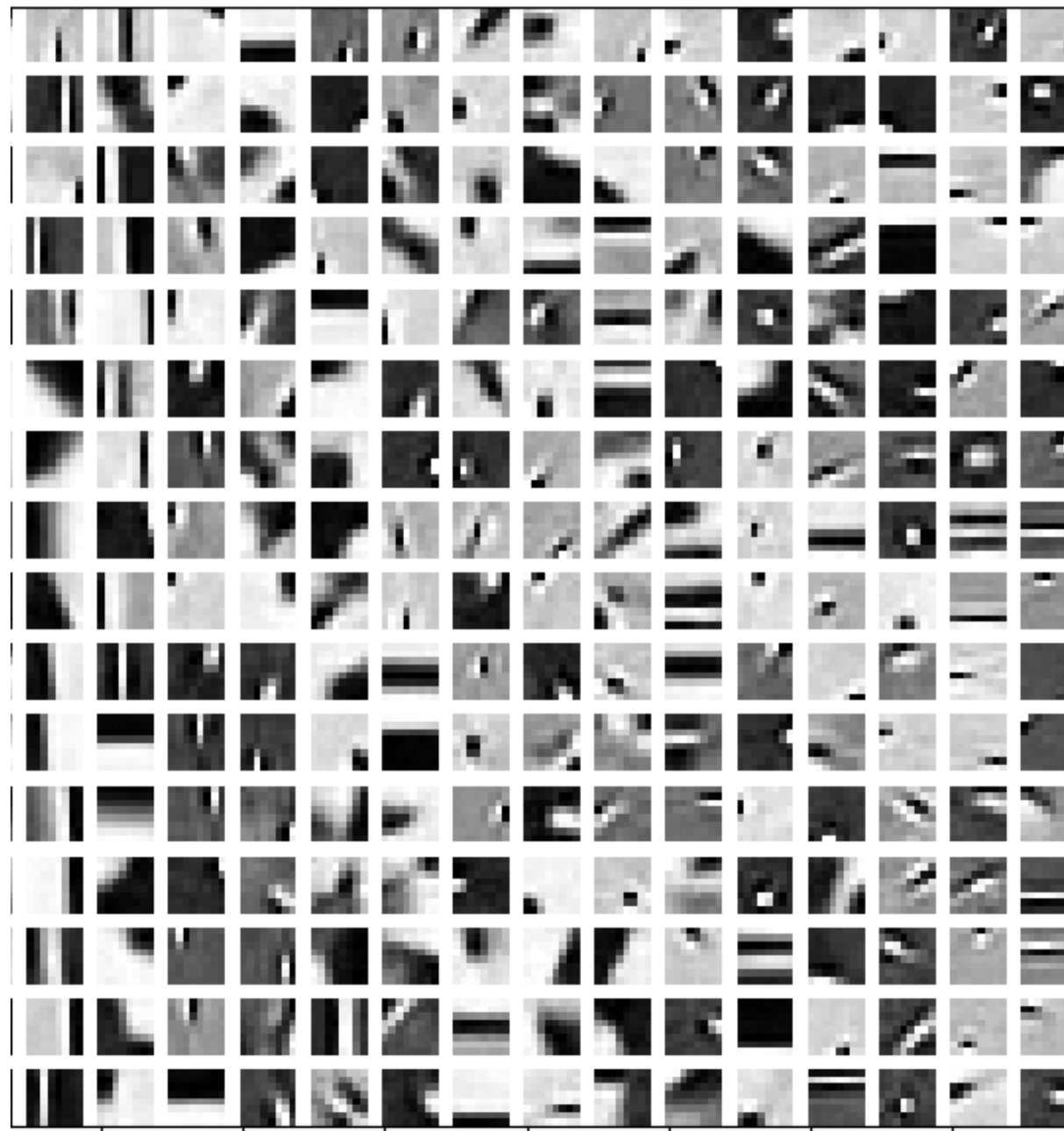
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Assignment

Denoising with Matching Pursuit

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Denoising via Sparse Coding

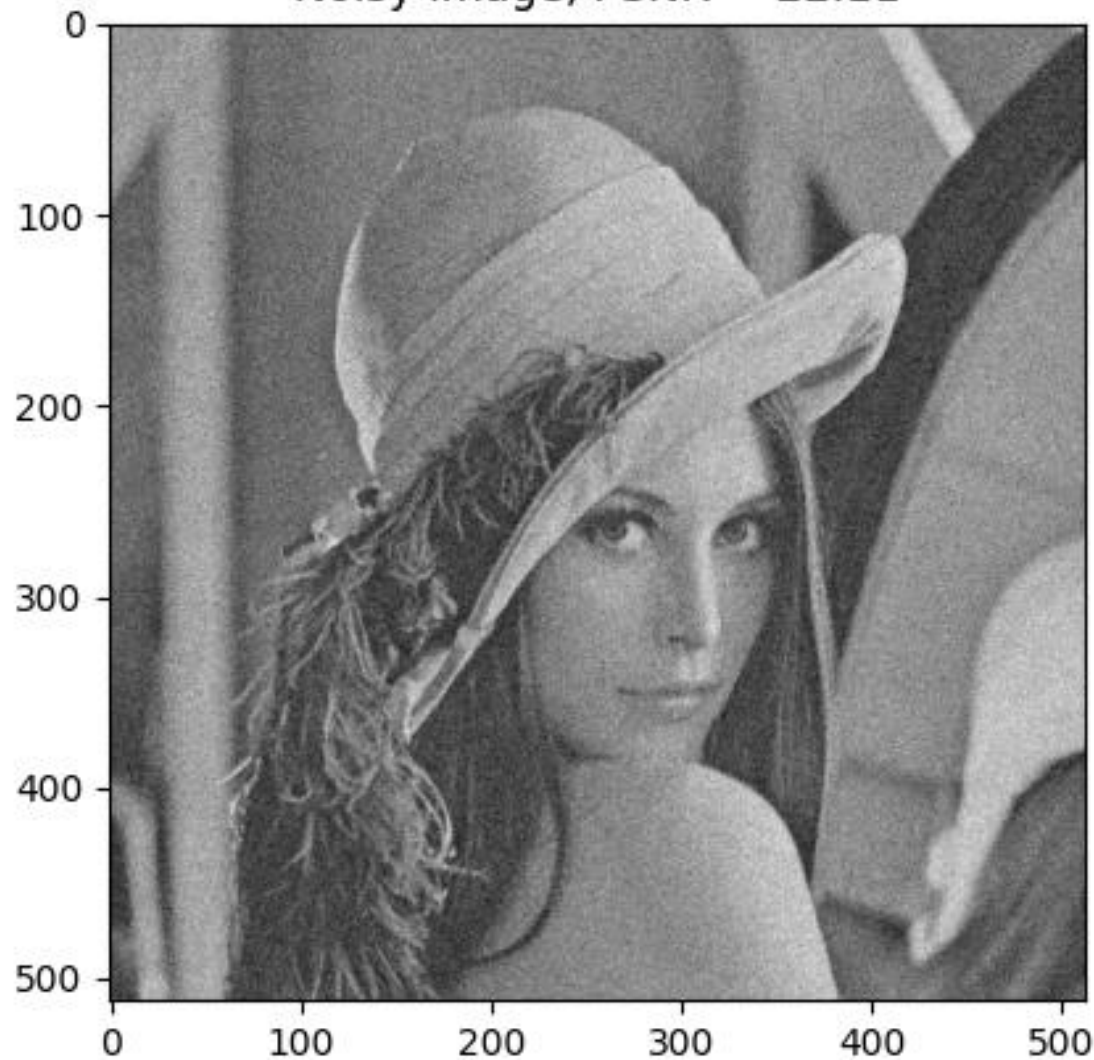Take the setup of Assignment 3 (denoising via DCT)

- Load the dictionary provided (learned from natural images)

- Replace the analysis and the thresholding with the sparse coding using a MP variant (start with OMP)

- Perform the synthesis and reconstruct the image

- Sparse Coding is much more demanding than analysis + thresholding. Take a step > 1 to reduce the computation

The Dictionary

The estimated image

Noisy image, PSNR = 22.11

Estimated Image, PSNR = 32.32

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