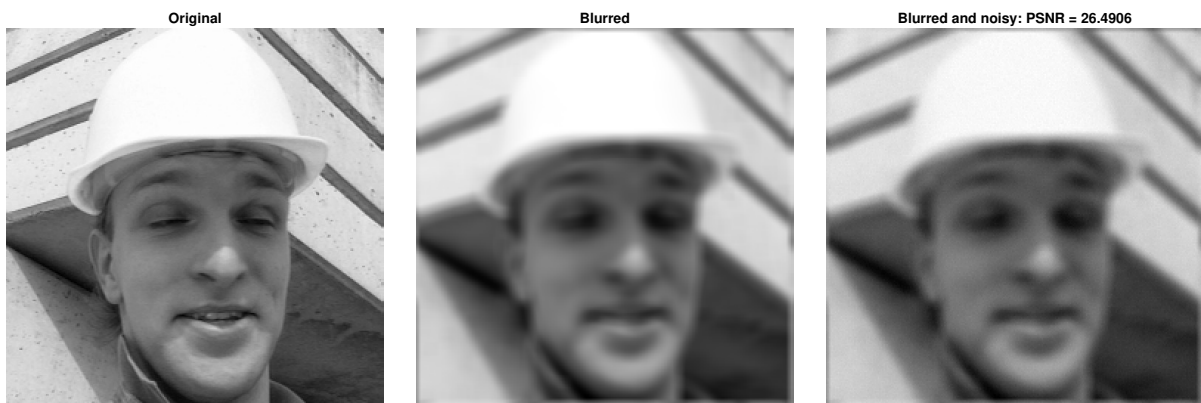# 236862.2x Bonus Project - Image Deblurring

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Part A: Data Construction

- PSNR value of final degraded image: **26.4906**

Part B: Deblurring via Regularization by Denoising (RED)

RED [1] reconstructed image:

- PSNR of reconstruction: **31.9884**

We get a better PSNR than the one of the input image (blurred and noisy). The use of state-of-the-art denoising algorithms in the RED framework is described in [1] (6.1). We should expect a better result if we use them instead.
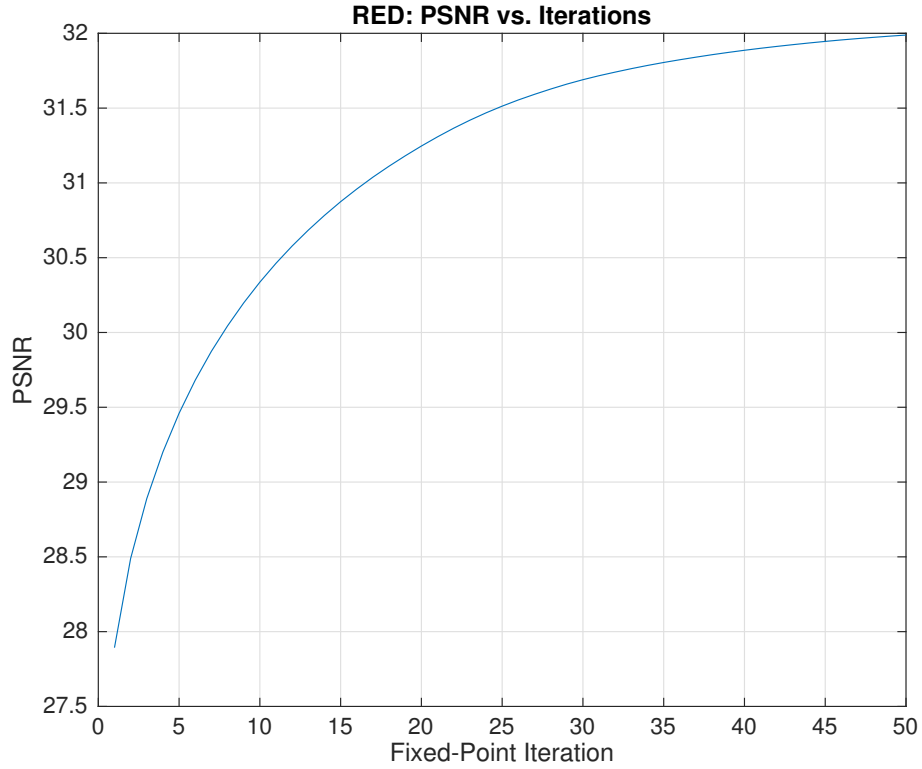
The PSNR increases with each iteration. We get an overall improvement of about 5.5dB after 50 iterations. However the algorithm feels pretty slow running in MATLAB Online.

References

[1] Y. Romano, M. Elad, and P. Milanfar, "The Little Engine That Could: Regularization by Denoising (RED)," *SIAM Journal on Imaging Sciences*, vol. 10, no. 4, pp. 1804–1844, 2017.