

Supporting Material for:
Wavelet Shrinkage with Consistent Cycle
Spinning Generalizes Total Variation Denoising

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January 5, 2012

Abstract

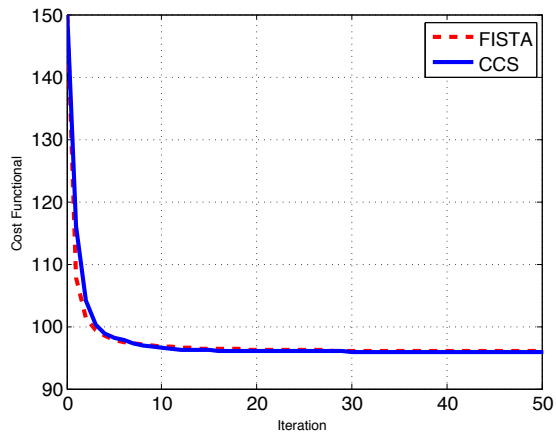
In this document, we present additional simulations supporting the results of the paper *Wavelet Shrinkage with Consistent Cycle Spinning Generalizes Total Variation Denoising* submitted to IEEE Signal Processing Letters. Throughout this document, we refer to the method proposed in the main paper as consistent cycle spinning (CCS).

Additional Experimental Results

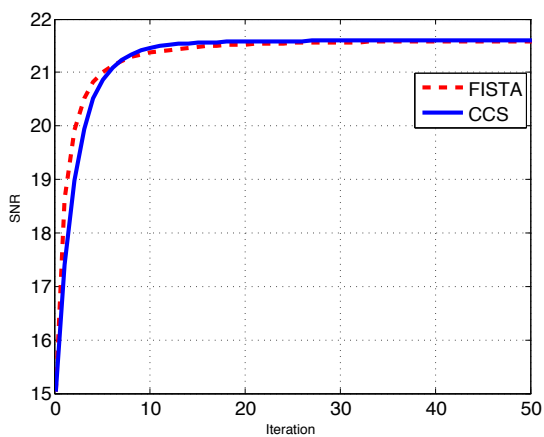
In Section IV-B of the main paper, we compare the SNR performance of log-regularized and total variation (TV) denoising. All the results in Figure 2 of the paper were obtained by running CCS. Here, for the same experiment, we compare the performance of CCS with FISTA [8] for TV regularization.

Figure 1(a) and (b) illustrate the evolution of the TV objective function and SNR over 50 iterations, respectively. Figure 1(c) shows the TV objective function over 5 seconds of CPU time. It can be seen from the figure that the performance of CCS is comparable to that of FISTA; however, the advantage of CCS is that it can readily handle arbitrary potential functions (e.g. log-regularizer).

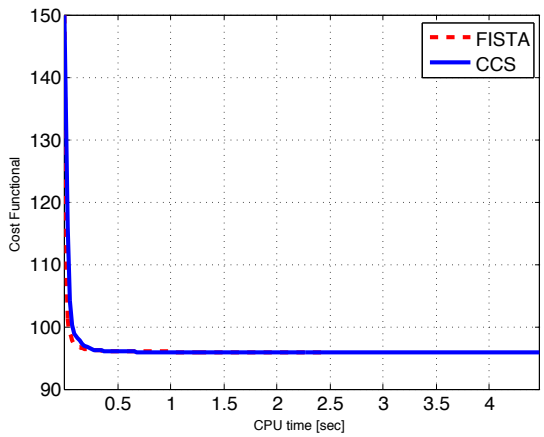
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(a)



(b)



(c)

Figure 1: Image denoising with TV regularization with FISTA (dashed-red) and CCS (solid-blue). (a) Evolution of the objective function over iterations. (b) Evolution of the SNR over iterations. (c) Evolution of the objective function over CPU time.