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Compressed sensing of color images. (English) Zbl 1197.94089
Signal Process. 90, No. 12, 3122-3127 (2010).

Summary: This work proposes a method for color imaging via compressive sampling. Random projections from each of the color channels are acquired separately. The problem is to reconstruct the original color image from the randomly projected (sub-sampled) data. Since each of the color channels are sparse in some domain (DCT, Wavelet, etc.) one way to approach the reconstruction problem is to apply sparse optimization algorithms. We note that the color channels are highly correlated and propose an alternative reconstruction method based on group sparse optimization. Two new non-convex group sparse optimization methods are proposed in this work. Experimental results show that incorporating group sparsity into the reconstruction problem produces significant improvement (more than 1 dB PSNR) over ordinary sparse algorithm.

MSC:

94A12 Signal theory (characterization, reconstruction, filtering, etc.)

Cited in 7 Documents

Keywords:

compressed sensing; color imaging; sparse reconstruction

Full Text: [DOI](#)

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