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Multi-Sparse Signal Recovery for Compressive Sensing

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Signal recovery is one of the key techniques of Compressive sensing (CS). It reconstructs the original signal from the linear sub-Nyquist measurements. Classical methods exploit the sparsity in one domain to formulate the L0 norm optimization. Recent investigation shows that some signals are sparse in multiple domains. To further improve the signal reconstruction performance, we can exploit this multi-sparsity to generate a new convex programming model. The latter is formulated with multiple sparsity constraints in multiple domains and the linear measurement fitting constraint. It improves signal recovery performance by additional a priori information. Since some EMG signals exhibit sparsity both in time and frequency domains, we take them as example in numerical experiments. Results show that the newly proposed method achieves better performance for multi-sparse signals.

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