Computing Group-Sparse Approximations

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Abstract: One-norm regularization has become an accepted tool for obtaining sparse approximate solutions to a system of linear equations. The basis-pursuit (BP) approach minimizes the one-norm of the solution; the BP-denoising (BPDN) approach balances it against the least-squares fit. These problems can be recast as conventional linear and quadratic programs. Useful generalizations of one-norm regularization that induce joint sparsity across groups of coefficients, or joint sparsity among solutions for multiple right-hand sides, lead to considerably more difficult optimization problems. We explore the effectiveness of a unified approach for solving such problems.

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