A generalized matrix Krylov subspace method for TV regularization

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Abstract

In this work we present an efficient algorithm to solve total variation (TV) regularizations of images contaminated by a both blur and noise. The unconstrained structure of the problem suggests that one can solve a constrained optimization problem by transforming the original unconstrained minimization problem to an equivalent constrained minimization one. An augmented Lagrangian method is developed to handle the constraints when the model is given with matrix variables, and an alternating direction method (ADM) is used to iteratively find solutions. The solutions of some subproblems are belonging to subspaces generated by application of successive orthogonal projections onto a class of generalized matrix Krylov subspaces of increasing dimension.

References

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