

Alternating Direction Methods of Multipliers to solve DNN-SDP problems

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Abstract

It is well known that SDP problems are solvable in polynomial time by Interior point methods. However, if the number of constraints m is of order $O(n^2)$, when the unknown positive semidefinite matrix is $n \times n$, Interior point methods become impractical both in terms of the time and the amount of memory required at each iteration. Several algorithmic alternatives have been introduced in the literature, including some based on augmented Lagrangian approaches. In the context of augmented Lagrangian approaches for solving Doubly nonnegative semidefinite programming problems, starting from two algorithms already present in literature, we introduce two new Alternating Direction Methods of Multipliers, that improve their computational efficiency. Numerical results are reported, showing the differences among the four methods presented.
