

Structured low-rank matrix completion with nuclear norm minimization: the case of Hankel and quasi-Hankel matrices

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Minimal rank completion of matrices with missing values is a difficult nonconvex optimization problem. A popular convex relaxation is based on minimization of the nuclear norm (sum of singular values) of the matrix. For this relaxation, an important question is when the two optimization problems lead to the same solution. In the literature, this question was addressed mostly in the case of random positions of missing elements and random known elements. Our focus lies on the completion of structured matrices with fixed pattern of missing values, in particular, on Hankel and quasi-Hankel matrix completion. The latter appears as a subproblem in the computation of symmetric tensor canonical polyadic decomposition. In the talk, we give an overview of these topics and report recent results on the performance of the nuclear norm minimization for completion of rank- r complex Hankel and quasi-Hankel matrices.