

Submission for an invited session, organized by Ana Cristina Casimiro
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A Polynomial Model for Filling In Incomplete Data

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Low rank matrix completion (LRMC), which asks to impute missing entries in a low rank matrix, is a classic problem with applications to recommender systems. Many practical algorithms for LRMC are available. In [1], Ongie et al. suggested that existing LRMC algorithms could be leveraged to impute missing entries in a matrix whose columns are drawn from an algebraic variety. Their method had empirical success at imputing missing entries in datasets drawn from unions of subspaces. In our own work, we analyze and extend on this suggestion. Our main contribution is a new process for solving matrix completion problems, some computational evidence that this process improves on the process suggested by Ongie, and a research direction related to the theoretical limitations of the new process.

References

[1] Greg Ongie, Daniel Pimentel-Alarcón, Laura Balzano, Rebecca Willett, Robert D. Nowak. Tensor Methods for Nonlinear Matrix Completion, 2020. <https://arxiv.org/abs/1804.10266>