

Errata and Corrections

Errata to “Codes and Designs Related to Lifted MRD Codes”

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In the above titled paper [1], the following correction is necessary.
The matrix in Example 7 (p. 1014) is incorrect. The correct matrix is as follows.

0 0 0 0	1 1 1 1	1 1 1 1
1 1 1 1	0 0 0 0	1 1 1 1
0 0 1 1	0 0 1 1	0 0 1 1
0 1 0 1	0 1 0 1	0 1 0 1
1 0 0 0	1 0 0 0	1 0 0 0
0 1 0 0	0 0 0 1	0 0 1 0
0 0 1 0	0 1 0 0	0 0 0 1
0 0 0 1	0 0 1 0	0 1 0 0
1 0 0 0	0 1 0 0	0 1 0 0
0 1 0 0	0 0 1 0	0 0 0 1
0 0 1 0	1 0 0 0	0 0 1 0
0 0 0 1	0 0 0 1	1 0 0 0
1 0 0 0	0 0 1 0	0 0 1 0
0 1 0 0	0 1 0 0	1 0 0 0
0 0 1 0	0 0 0 1	0 1 0 0
0 0 0 1	1 0 0 0	0 0 0 1
1 0 0 0	0 0 0 1	0 0 0 1
0 1 0 0	1 0 0 0	0 1 0 0
0 0 1 0	0 0 1 0	1 0 0 0
0 0 0 1	0 1 0 0	0 0 1 0

REFERENCES

- [1] T. Etzion and N. Silberstein, “Codes and designs related to lifted MRD codes,” *IEEE Trans. Inf. Theory*, vol. 59, no. 2, pp. 1004–1017, Feb. 2013.

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Corrections to “ADMiRA: Atomic Decomposition for Minimum Rank Approximation”

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Abstract—In this correspondence, a corrected version of the convergence analysis given by Lee and Bresler is presented.

Index Terms—Compressed sensing, matrix completion, performance guarantee, rank minimization, singular value decomposition.

I. CORRECTIONS

First, we present a correction of [1, Th. 6.1]. The proof of [1, Lemma 6.2] had an error, which we correct by replacing [1, Lemma 6.2] by Lemma 2.1. To improve the threshold for the R-RIC, we also provide improved versions of [1, Lemmata 6.4 and 6.5]. The modified convergence results due to these replacements, presented in Theorem 1.1, are identical to the original version [1, Th. 6.1], except minor improvements on the constant in the noise term, from 13ϵ to 11ϵ , and on the required R-RIP condition, from $\delta_{4r}(\mathcal{A}) < 0.04$ to $\delta_{4r}(\mathcal{A}) < 0.065$. In fact, to guarantee just linear convergence (that is, replacing the error decay constant 0.5 in Theorem 1.1 by a number $0 < a < 1$), it suffices to satisfy $\delta_{4r}(\mathcal{A}) < 0.26$. These corrections apply straightforwardly also to [1, Th. 4.1] for the compressible matrix case, with similar improvement to $\delta_{4r}(\mathcal{A}) < 0.065$, and slight reduction of the constant factor on ϵ from 16 to 14.

Theorem 1.1 (Correction of [1, Th. 6.1]): Let $\hat{X}_k$ denote the estimate of X_0 in the k th iteration of ADMiRA. Assume that $\text{rank}(X_0) \leq r$. If $\delta_{4r}(\mathcal{A}) \leq 0.065$, then for each $k \geq 0$, $\hat{X}_k$ satisfies the following recursion:

$$\|X_0 - \hat{X}_{k+1}\|_F \leq 0.5\|X_0 - \hat{X}_k\|_F + 5.5\epsilon$$

where ϵ is the unrecoverable energy. From the aforementioned relation, it follows that

$$\|X_0 - \hat{X}_k\|_F \leq 2^{-k}\|X_0\|_F + 11\epsilon, \quad \forall k \geq 0.$$

Second, we withdraw the claim [1, Th. 4.2] that ADMiRA converges within finitely many steps. The finite convergence property of CoSaMP in the vector case does not extend to that of ADMiRA in the matrix case. However, the linear convergence of ADMiRA implied by Theorem 1.1 is still valid.

II. PROOF OF THEOREM 1.1

The proof of Theorem 1.1 is almost identical to that of the original version [1, Th. 6.1]. Only a few lemmata are replaced as presented below. We will present only the differences from the corresponding original versions.

First, we replace [1, Lemma 6.2], which had an error in its proof, by the following result, proved in the Appendix.

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