

1 A Additional Experiment

2 **Comparison with the convex relaxation approach using Movielens Data:** We evaluated our
3 proposed algorithm (Algorithm 1) against the convex relaxation method utilizing the same data
4 processing method described in Section 6.1 on the Movielens dataset. Similar to the comparison in
5 Appendix H, where synthetic data was utilized, the convex relaxation approach approximates the
6 non-convex cost function through trace-norm regularization. Figure 1 indicates that our proposed
7 algorithm shows fast convergence following the exploration phase and consistently outperforms the
8 convex relaxation approach, which does not converge. A potential reason for this is that the solution
9 to the convex relaxed problem need not necessarily be the solution to the actual non-convex problem.
10 This experiment validates the effectiveness of the proposed approach.

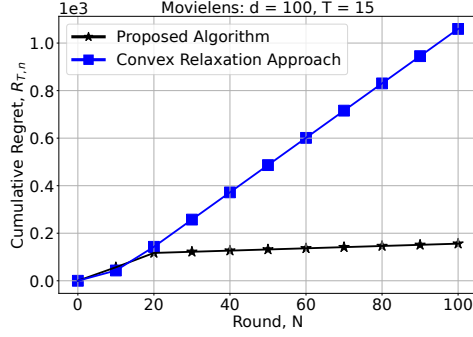


Figure 1: **Comparison with the Convex Relaxation Approach:** Cumulative regret vs. learning round for Movielens data, with parameters set as $d = 100$, $T = 15$, $r = 1$, $N_1 = 20$, $\sigma^2 = 0.01$.