Progress Report

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1 Research Objective and Goal

The objective of this study is to improve the booleanization part of algorithm from Truong et al. (2021). Starting with understanding the nonnegative matrix factorization problem and algorithms to solve it.

2 Short-Term Goals

1. Implement the algorithm from Xiao et al. (2024), add the local search to it and compare to Truong et al. (2021).

3 Progress

1. I have implemented the algorithm and added the local search.

2. I am currently searching for the best parametres to compare with banmf.
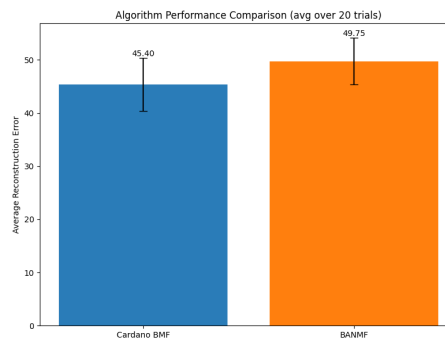
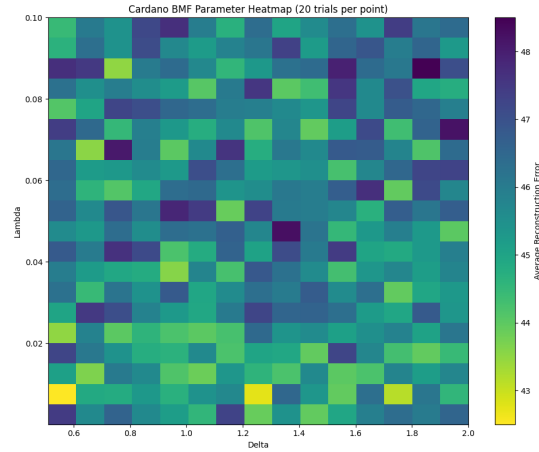## 4 Results

Figure 1: Local Search with Information
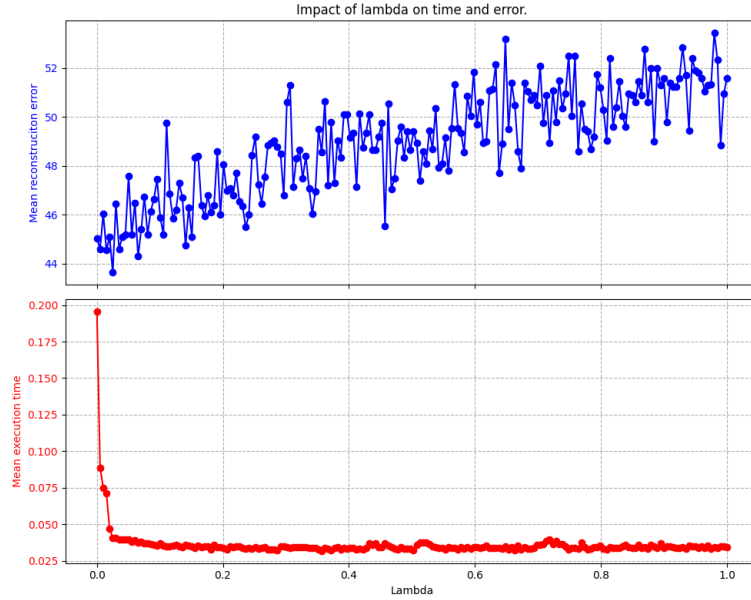
Figure 2: Local Search with Information

Figure 3: Local Search with Information

References

Truong, D. P., Skau, E., Desantis, D., and Alexandrov, B. (2021). Boolean matrix factorization via nonnegative auxiliary optimization. *IEEE Access*, 9:117169–117177.

Xiao, H., Migita, T., and Takahashi, N. (2024). A new boolean matrix factorization algorithm based on cardano's method. In *2024 7th International Conference on Information and Computer Technologies (ICICT)*, pages 51–56.