

Progress Report

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July 9, 2025

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. Read and understand the article Xiao et al. (2024)

3 Progress

1. I have read the article and think that I understand most of what is required to implement it but I did not worked on the convergence proof.
2. I started implementing the algorithm but still have a bug with the non increasing property.

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.