

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. Reading the paper entitled “Algorithms for Non-negative Matrix Factorization”, Lee and Seung (2000). Focusing on the cost function constructed using the Euclidean distance.

3 Progress

1. I read the paper. When trying to redo the different proofs, I think that I understand most of them, but I am still working on the proof of the lemma 2.

References

- Lee, D. and Seung, H. S. (2000). Algorithms for non-negative matrix factorization. In Leen, T., Dietterich, T., and Tresp, V., editors, *Advances in Neural Information Processing Systems*, volume 13. MIT Press.
- Truong, D. P., Skau, E., Desantis, D., and Alexandrov, B. (2021). Boolean matrix factorization via nonnegative auxiliary optimization. *IEEE Access*, 9:117169–117177.