

Erratum for “Computing the Schulze Method for Large-Scale Preference Data Sets”

Martin Lackner
WU Wien

Reinhard Pichler
TU Wien

April 7, 2025

The paper *Computing the Schulze Method for Large-Scale Preference Data Sets* [Csar et al., 2018] contains the claim that the RANKED PAIRS WINNER DETERMINATION problem is P-complete (Theorem 2). The proof of this claim is incorrect, as it uses a reduction from BOOLEAN FORMULA EVALUATION, which is (only) NC¹-complete. The statement, however, holds, as P-hardness can be shown via a reduction from EDGE MAXIMAL ACYCLIC SUBGRAPH [Fitzsimmons et al., 2025], which indeed is P-complete [Greenlaw et al., 1995].

Acknowledgements. We are thankful to Zack Fitzsimmons, Zohair Raza Hassan, and Edith Hemaspaandra, who have made us aware of this issue and for finding a correct proof of the statement.

References

- T. Csar, M. Lackner, and R. Pichler. Computing the Schulze method for large-scale preference data sets. In *Proceedings of the 27th International Joint Conference on Artificial Intelligence (IJCAI 2018)*, pages 180–187. ijcai.org, 2018. URL <https://doi.org/10.24963/ijcai.2018/25>.
- Z. Fitzsimmons, Z. R. Hassan, and E. Hemaspaandra. Personal communication, 2025. Email to Martin Lackner, 2025-03-27.
- R. Greenlaw, H. J. Hoover, and W. L. Ruzzo. *Limits to parallel computation: P-completeness theory*. Oxford university press, 1995.