Natto: a small infeasibility prover based on term orders

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Natto is a prototype tool for infeasibility analysis, primarily developed to assess the impact of formalizing order-based infeasibility methods [1] in the context of certification. It implements a subset of the infeasibility techniques used in the Nagoya Termination Tool [2, 3], specifically polynomial interpretations over the positive and negative integers, as well as the weighted path order. The generated proofs are verifiable by CeTA.

References

[1] D. Kim, T. Saito, R. Thiemann, and A. Yamada. An Isabelle formalization of co-rewrite pairs for non-reachability in term rewriting. In *Proc. 14th CPP*, pages 272–282, 2025.

[2] A. Yamada, K. Kusakari, and T. Sakabe. Nagoya Termination Tool. In *Proc. RTA-TLCA 2014*, LNCS 8560, pages 466–475, 2014.

[3] A. Yamada. Term orderings for non-reachability of (conditional) rewriting. In *Proc. 11th IJCAR*, LNAI 13385, pages 248–267, 2022.