CoCo 2022 Participant: FORT-h 2.0*

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The first-order theory of rewriting is a decidable theory for finite left-linear right-ground rewrite systems. The decision procedure goes back to Dauchet and Tison [1]. FORT-h implements a new variant, described in [2], of the decision procedure for the larger class of linear variable-separated rewrite systems. This variant supports a more expressive theory and is based on anchored ground tree transducers. More importantly, it can produce certificates for the YES/NO answers. These certificates can then be verified by FORTify, an independent Haskell program that is code-generated from the formalization of the decision procedure in the proof assistent Isabelle/HOL.

Compared to last year's version, FORT-h 2.0 makes use of improved signature extension results for proving properties on non-ground terms [5]. More specifically, FORT-h is now able add fewer fresh constants to the signature depending on certain syntactic properties of the input systems. This shrinks the size of the constructed automata leading to significantly faster execution times in some cases. A command-line version of FORT-h 2.0 can be downloaded from

http://fortissimo.uibk.ac.at/fort(ify)/

FORT-h participates in the following CoCo 2022 categories: COM, GCR, NFP, UNC, and UNR. Together with FORTify [6], it participates in CPF-TRS in addition to the previously mentioned ones to produce certified YES/NO answers.

References

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[5] Alexander Lochmann, Fabian Mitterwallner, and Aart Middeldorp. Formalized Signature Extension Results for Equivalence In *Proc. 11th International Workshop on Confluence*, 2022. This volume.

[6] Alexander Lochmann, Fabian Mitterwallner, and Aart Middeldorp. CoCo 2022 Participant: FORTify 2.0. In *Proc. 11th International Workshop on Confluence*, 2022. This volume.

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