

CoCo 2018 Participant: CSI 1.2.1*

Bertram Felgenhauer¹, Aart Middeldorp¹, Fabian Mitterwallner¹, and
Julian Nagele²

¹ Department of Computer Science, University of Innsbruck, Austria

² Queen Mary University of London, United Kingdom

CSI is a strong automatic tool for (dis)proving confluence of first-order term rewrite systems (TRSs). It has been in development since 2010. Its name is derived from the Confluence of the rivers Sill and Inn in Innsbruck. The tool is available from

<http://cl-informatik.uibk.ac.at/software/csi>

under a LGPLv3 license. A detailed description of CSI can be found in [4]. Compared to last year's version, CSI 1.2.1 contains an implementation of the decision procedure for UNC of linear shallow rewrite systems by Zinn and Verma [5]. Furthermore it supports certified output for the persistent decomposition of many-sorted systems [1–3].

CSI participates in the categories CPF-TRS, NFP, TRS, UNC, and UNR of CoCo 2018.

References

- [1] T. Aoto, J. Yoshida, and Y. Toyama. Proving confluence of term rewriting systems automatically. In *Proc. 20th International Conference on Rewriting Techniques and Applications*, volume 5595 of *Lecture Notes in Computer Science*, pages 93–102, 2009. doi: [10.1007/978-3-642-02348-4_7](https://doi.org/10.1007/978-3-642-02348-4_7).
- [2] B. Felgenhauer, A. Middeldorp, H. Zankl, and V. van Oostrom. Layer systems for proving confluence. *ACM Transactions on Computational Logic*, 16(2:14):1–32, 2015. doi: [10.1145/2710017](https://doi.org/10.1145/2710017).
- [3] B. Felgenhauer and F. Rapp. Layer systems for confluence – Formalized, 2018. In preparation.
- [4] J. Nagele, B. Felgenhauer, and A. Middeldorp. CSI: New evidence – A progress report. In *Proc. 26th International Conference on Automated Deduction*, volume 10395 of *Lecture Notes in Artificial Intelligence*, pages 385–397, 2017. doi: [10.1007/978-3-319-63046-5_24](https://doi.org/10.1007/978-3-319-63046-5_24).
- [5] J. Zinn and R.M. Verma. A polynomial algorithm for uniqueness of normal forms of linear shallow term rewrite systems. *Applicable Algebra in Engineering, Communication and Computing*, 21(6):459–485, 2010. doi: [10.1007/s00200-010-0133-1](https://doi.org/10.1007/s00200-010-0133-1).

*Supported by FWF (Austrian Science Fund) project P27528.