

CoCo 2015 Participant: CSI 0.5.1*

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CSI is an automatic tool for (dis)proving confluence of first-order term rewrite systems (TRSs). Its name is derived from the Confluence of the rivers Sill and Inn in Innsbruck. The tool is open source and available from <http://cl-informatik.uibk.ac.at/software/csi>, where also a web interface is linked. CSI is based on the termination prover $\mathbb{T}\mathbb{T}2$. The main features of CSI are listed below. Several of these are described in more detail in [8].

- 2012 CSI is equipped with a strategy language, which allows to configure it flexibly. It features a modular implementation of the decreasing diagrams technique, decomposing TRSs into smaller TRSs based on ordered sorts [2], a cubic time decision procedure for confluence of ground TRSs [1], and non-confluence checks based on tcap and tree automata [8]. CSI can produce proofs in `cpf` format that can be verified by certifiers like `CeTA` [7].
- 2013 The tree automata techniques for detecting non-confluence have been improved. We extended the modular decreasing diagrams implementation to optionally use parallel rewrite steps and parallel critical pairs [9].
- 2014 We implemented a redex based labeling and a refinement of rule labeling using persistence [9]. CSI produces certifiable output for tree automata based non-confluence [3].
- 2015 CSI now adds and removes rules before trying to establish (non-)confluence [4]. Furthermore, we incorporated confluence criterion for strongly non-overlapping systems by Sakai et al. [6]. Finally, CSI produces `cpf` output for the rule labeling heuristic, optionally combined with relative termination [5].

References

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