

CoLL-Saigawa: A Joint Confluence Tool*

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CoLL-Saigawa is a tool for automatically proving or disproving confluence of (ordinary) term rewrite systems (TRSs). The tool, written in OCaml, is freely available from:

<http://www.jaist.ac.jp/project/saigawa/>

The typical usage is: `collsaigawa <file>`. Here the input file is written in the standard WST format. The tool outputs YES if confluence of the input TRS is proved, NO if non-confluence is shown, and MAYBE if the tool does not reach any conclusion.

CoLL-Saigawa is a joint confluence tool of CoLL v1.1 [8] and Saigawa v1.8 [4]. If an input TRS is left-linear, CoLL proves confluence. Otherwise, Saigawa analyzes confluence. CoLL is a confluence tool specialized for left-linear TRSs. It proves confluence by using Hindley’s commutation theorem [3] together with the three commutation criteria: Development closeness [2, 9], rule labeling with weight function [10, 1], and Church-Rosser modulo A/C [6]. Saigawa can deal with non-left-linear TRSs. The tool employs the four confluence criteria: The criteria based on critical pair systems [5, Theorem 3] and on extended critical pairs [7, Theorem 2], rule labeling [10], and Church-Rosser modulo AC [6]. Saigawa uses $T_T T_2$ and MU-TERM to check (relative) termination.¹ A suitable rule labeling is searched by using MiniSmt.²

This version of CoLL-Saigawa is still at the experimental stage. Full integration of the two tools is planned for the next version.

References

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¹<http://colo6-c703.uibk.ac.at/ttt2/> and <http://zenon.dsic.upv.es/muterm/>

²<http://cl-informatik.uibk.ac.at/software/minismt/>