

CoLL-Saigawa 1.5: A Joint Confluence Tool*

Kiraku Shintani and Nao Hirokawa

JAIST, Japan

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 at:

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

The typical usage is: `collsaigawa <file>`. Here the input file is written in the TRS format [6]. 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 v1.5 [9] and Saigawa v1.9 [2]. If an input TRS is left-linear, CoLL proves confluence. Otherwise, Saigawa analyzes confluence. CoLL is a commutation tool specialized for left-linear TRSs. It proves confluence as self-commutation by using Hindley’s commutation theorem [1] together with the three commutation criteria: Almost development closeness [10], rule labeling with weight function [11], and Church-Rosser modulo A/C [4]. Saigawa can deal with non-left-linear TRSs. The tool employs the four confluence criteria: The criteria based on critical pair systems [3, Theorem 3] and on extended critical pairs [5, Theorem 2], rule labeling [11], and Church-Rosser modulo AC [4]. Furthermore, version 1.5 supports the following confluence criteria: parallel closedness based on parallel critical pairs [12], simultaneous closedness [7], and also parallel-upside and outside closedness [8].

References

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