CO3 (Version 1.4)

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CO3, a converter for proving confluence of conditional TRSs, tries to prove confluence of conditional term rewriting systems (CTRS) by using a transformational approach. The tool is based on the result in [3, 7, 6]: the tool first transforms a given weakly-left-linear (WLL) and ultra-WLL 3-DCTRS into an unconditional term rewriting system (TRS) by using the *SR transformation* $\mathbb{SR}$ [9, 10, 5] or the *unraveling* $\mathbb{U}$ [4, 8], and then verifies confluence of the transformed TRS. This tool is basically a converter of CTRSs to TRSs. The main expected use of this tool is the collaboration with other tools for proving confluence of TRSs, and thus this tool has very simple and lightweight functions to verify properties such as confluence and termination of TRSs. The tool is available from http://www.trs.css.i.nagoya-u.ac.jp/co3/.

The main technique for proving confluence is based on the following theorems: (a) a normal 1-CTRS $\mathcal{R}$ is confluent if $\mathcal{R}$ is WLL and $\mathbb{U}(\mathcal{R})$ is confluent [1, 3], (b) a 3-DCTRS $\mathcal{R}$ is confluent if $\mathcal{R}$ is WLL and $\mathbb{U}(\mathcal{R})$ is confluent [2, 3], (c) a WLL normal 1-CTRS $\mathcal{R}$ is confluent if $\mathbb{SR}(\mathcal{R})$ is confluent [7], and (d) a WLL and ultra-WLL 3-DCTRS $\mathcal{R}$ is confluent if $\mathbb{SR}(\mathcal{R})$ is confluent [6]. Version 1.3 tried to prove confluence of $\mathbb{SR}(\mathcal{R})$ if $\mathcal{R}$ is a 3-DCTRS, but this latest version does not try it because $\mathbb{SR}(\mathcal{R})$ is not confluent due to some auxiliary rules (see [6]).

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