

CoCo 2018 Participant: CeTA 2.33*

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The tool CeTA [10] is a certifier for confluence and non-confluence proofs of term rewrite systems (TRSs) and conditional term rewrite systems (CTRSs). Its soundness is proven as part of IsaFoR, the *Isabelle Formalization of Rewriting*. The following techniques are currently supported in CeTA—for further details we refer to the certification problem format (CPF) and to the sources of IsaFoR and CeTA (<http://cl-informatik.uibk.ac.at/ceta/>).

Term rewrite systems. For terminating systems CeTA can check confluence via the critical pair lemma. For possibly non-terminating TRSs CeTA supports several criteria based on linearity and restricted joinability of critical pairs [5], the rule labeling heuristic [4], addition and removal of redundant rules [3], and terminating critical-pair-closing systems [6]. To certify non-confluence one can provide a divergence and a non-joinability certificate, based on distinct normal forms, *tcap*, interpretations, or tree automata [2]. Since 2018, CeTA features persistent decomposition [1].

Conditional term rewrite systems. For CTRSs CeTA supports: certifying confluence of almost orthogonal, properly oriented, right-stable 3-CTRSs [7]; unraveling, a technique for transforming a given CTRS into a TRS; confluence of quasi-decreasing strongly deterministic CTRSs, possibly in conjunction with *inlining* [8].

Completion. Since version 2.33 CeTA supports the certification of ordered completion [9].

References

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