

CoCo 2022 Participant: CeTA 2.42

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The tool CeTA [4] is a certifier for, among other properties, (non-)confluence of term rewrite systems with and without conditions. Its soundness is proven as part of the formal proof library IsaFoR, the Isabelle Formalization of Rewriting. For a complete reference of supported techniques we refer to the certification problem format (CPF) and the IsaFoR/CeTA website:

<http://cl-informatik.uibk.ac.at/isafor/>

In the following, we describe what is new in version 2.42 of CeTA.

The most important extension with respect to CoCo is the ability to check confluence of left-linear TRSs via van Oostrom’s development closedness criterion [5]. It is trivial to use this criterion in a certificate, since the application conditions are checked automatically without requiring further information on the joins. Some important steps of the formalization effort are described in [1]. Note that, although every parallel closed TRS is also development closed, this latter method in CeTA 2.42 does not (yet) completely subsume the parallel closedness criterion that was added in version 2.25 [3]. The reason is that the formalization of parallel closedness allows a weakened joining condition for overlays—an extension known as *almost* parallel closed. As shown in [5] the same extension can be applied to the development closedness criterion but its formalization in IsaFoR is currently still work in progress.

Finally the efficiency of the parser inside CeTA has been improved for version 2.42 by providing a custom encoding of characters. More details on this can be found in [2].

References

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