

CoCo 2020 Participant: ConCon 1.10

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ConCon is a fully automatic confluence checker for *oriented* first-order conditional term rewrite systems (CTRSs). It is written in Scala and available under the LGPL license at

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

For more details on its implementation and employed methods we refer to an earlier system description [5].

Starting from version 1.10 ConCon supports arbitrary external tools for proving infeasibility. In CoCo 2020 this will be showcased by using `nonreach` (version 1.2.2) [3] as external tool.

Other external tools that are used to discharge subgoals concerning (non-conditional) confluence and termination are CSI (version 1.2.3) [2] and $\top\top_2$ (version 1.20) [1].

While most other methods of ConCon can be certified using `CeTA` (version 2.39) [4, 6], certification of `nonreach` proofs is future work.

References

- [1] Martin Korp, Christian Sternagel, Harald Zankl, and Aart Middeldorp. Tyrolean Termination Tool 2 In *Proc. 20th RTA*, 2009, doi:[10.1007/978-3-642-02348-4_21](https://doi.org/10.1007/978-3-642-02348-4_21)
- [2] Bertram Felgenhauer, Aart Middeldorp, and Fabian Mitterwallner. CoCo 2019 Participant: CSI 1.2.3. In *Proc. 8th IWC*, 2019. <http://iwc2019.cic.unb.br/proc-HOR-IWC-CoCo.pdf>
- [3] F. Meßner. CoCo 2020 Participant: `nonreach`. In *Proc. 9th IWC*, 2020. To appear.
- [4] J. Schöpf, C. Sternagel, R. Thiemann, and A. Yamada. CoCo 2020 Participant: `CeTA` 2.39. In *Proc. 9th IWC*, 2020. To appear.
- [5] C. Sternagel and S. Winkler. CoCo 2019 Participant: ConCon 1.9. In *Proc. 8th IWC*, 2019. <http://iwc2019.cic.unb.br/proc-HOR-IWC-CoCo.pdf>
- [6] R. Thiemann and C. Sternagel. Certification of Termination Proofs using `CeTA`. In *Proc. 22nd TPHOLs*, volume 5674 of *LNCS*, pages 452–468, 2009. doi:[10.1007/978-3-642-03359-9_31](https://doi.org/10.1007/978-3-642-03359-9_31).