

CoCo 2026 Participant: CSI 1.2.8

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CSI is an automatic tool for (dis)proving confluence and related properties of first-order term rewrite systems (TRSs). It has been in development since 2010 and has had many different contributors over the years. Its name is derived from the Confluence of the rivers Sill and Inn in Innsbruck. The tool is available from

<https://cl-informatik.uibk.ac.at/research/software/csi>

under a LGPLv3 license. A detailed description of CSI can be found in [4]. Some of the implemented techniques are described in [1,3,6]. CSI can also produce certificates for confluence results, which are checked by CēTA [2].

CSI participates in the SRS and TRS categories of CoCo 2026 both as a standalone tool and in combination with CēTA providing certified confluence and non-confluence answers. In addition, CSI participates in the NFP, UNC and UNR categories. In 2025 CSI won not only the TRS category, but also with CēTA it won the RELIABILITY category where tools are ranked based on the number of certifiable answers.

There is one novelty about CSI in 2026: whereas Okui’s confluence criterion [5] was previously only used in the unrestricted mode of CSI, now CSI also uses this criterion in the certified mode with proper CPF output.

CSI uses the conversion tool¹ to transform ARI problems into COPS problems.

References

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- [6] Harald Zankl. Challenges in Automation of Rewriting. Habilitation thesis, University of Innsbruck, 2014.

¹<https://project-coco.uibk.ac.at/ARI/#conversion>