

# CONFident at the 2026 Confluence Competition\*

Raúl Gutiérrez and Salvador Lucas

VRAIN, Universitat Politècnica de València, Valencia, Spain

`raul.gutierrez@upv.es`

`slucas@dsic.upv.es`

## 1 Overview

CONFident is a tool which is able to prove confluence of TRSs, CS-TRSs, CTRSs and CS-CTRSs. Recently, CONFident has been extended to support generalized term rewriting systems (GTRSs), a class of term rewriting systems that integrates CS-CTRSs and Horn clauses [4, 5]. The tool is available here:

<http://zenon.dsic.upv.es/confident/>.

It is written in Haskell implementing the Confluence Framework. We implement the processors using the logical approach presented in [1, 3, 7] and mechanizing them by external tools like MU-TERM [3], infChecker [1, 6], AGES [2], Prover9 and Mace4 [9] and Barcelogic<sup>1</sup>. Last improvements of infChecker can be found in [8].

## References

- [1] R. Gutiérrez and S. Lucas. Automatically Proving and Disproving Feasibility Conditions. In N. Peltier and V. Sofronie-Stokkermans, editor, *Proc. of IJCAR'2020*, LNCS 12167:416–435. Springer, 2020.
- [2] R. Gutiérrez and S. Lucas. Automatic Generation of Logical Models with AGES. In *CADE 2019: Automated Deduction - CADE 27*, LNCS 11716:287:299. Springer, 2019.
- [3] R. Gutiérrez and S. Lucas. MU-TERM: Verify Termination Properties Automatically (System Description). In N. Peltier and V. Sofronie-Stokkermans, editor, *Proc. of IJCAR'2020*, LNCS 12167:436–447. Springer, 2020.
- [4] R. Gutiérrez. and S. Lucas. On Proving Confluence of Generalized Term Rewriting Systems Using CONFident. *Proc. of the 15th International Workshop on Confluence, IWC'26*, to appear, 2026.
- [5] R. Gutiérrez. and S. Lucas. Proving Confluence in the Confluence Framework with CONFident. *Fundamenta Informaticae*, 192, Issue 2: LOPSTR 2022, 2024.
- [6] R. Gutiérrez and S. Lucas. Proving and disproving feasibility with infChecker. In *Proc. of the 14th International Workshop on Confluence, IWC'25*, 38, 2025.
- [7] S. Lucas. Proving semantic properties as first-order satisfiability. *Artificial Intelligence* 277, paper 103174, 24 pages, 2019.
- [8] S. Lucas. Confluence of Almost Parallel-Closed Generalized Term Rewriting Systems. In *Proc. of 30th International Conference on Automated Deduction, CADE-30*, LNAI 15943:187–206, 2025.
- [9] W. McCune. Prover9 and Mace4. [online]. Available at <https://www.cs.unm.edu/~mccune/mace4/>.

---

\*Partially supported by MCIN/AEI project PID2024-162030OB-I00 funded by MCIN/AEI/10.13039/501100011033 and by “ERDF A way of making Europe” and by the grant CIPROM/2022/6 funded by Generalitat Valenciana.

<sup>1</sup><https://barcelogic.com/>