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infChecker at CoCo 2026

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- infChecker is a tool for checking **(in)feasibility of goals**
 $\mathcal{G} = \{F_i\}_{i=1}^m$, where $F_i = (s_{ij} \bowtie_{ij} t_{ij})_{i=1}^{n_i}$.
- $\bowtie_{ij}$ represents **predicates** on terms defined by provability of goals $s \bowtie_{ij} t$ with respect to a *first-order theories* $\text{Th}_{\bowtie_{ij}}$.
- $\bowtie_{ij}$ can be one of the following predicates:
 - One (CS-)rewriting step ($\rightarrow$, $\rightarrow$).
 - Zero or more (CS-)rewriting steps ($\rightarrow^*$, $\rightarrow^*$).
 - One or more (CS-)rewriting steps ($\rightarrow^+$, $\rightarrow^+$).
 - Zero or one (CS-)rewriting steps ($\rightarrow^=$, $\rightarrow^=$).
 - Subterm ($\mid \geq$) and strict subterm ($\mid >$).
 - (CS-)Joinability ($\rightarrow^* \leftarrow$, $\rightarrow^* \leftarrow$).
 - One (CS-)convertibility step ($\leftrightarrow$, $\leftrightarrow$).
 - Zero or more (CS-)convertibility steps ($\leftrightarrow^*$, $\leftrightarrow^*$).

- The flexibility of the integration of infChecker with CONFident helped to prove **(non-)confluence** of Generalized Term Rewriting Systems (GTRSs).
- We encountered several issues in producing a compiled version that worked correctly in the new Starexec version. We hope that no problems were missed as a consequence of these issues.
- The bibliography contains links to our recent publications.

Implementation and Bibliography

- It is written in Haskell and implements the **Feasibility Framework**. The tool is available here:

`http://zenon.dsic.upv.es/infChecker/`

- Bibliography:

GL25 R. Gutiérrez and S. Lucas. Proving and disproving feasibility with infChecker. In Proc. of the 14th International Workshop on Confluence, IWC'25, pp 38–43, 2025.

GL20 R. Gutiérrez and S. Lucas. Automatically Proving and Disproving Feasibility Conditions. In Proc. of IJCAR'2020, LNCS 12167:416–435. Springer, 2020.

Luc24 S. Lucas. Local confluence of conditional and generalized term rewriting systems. Journal of Logical and Algebraic Methods in Programming, 136, paper 100926, pages 1-23, 2024.

LG18 S. Lucas and R. Gutiérrez. Use of Logical Models for Proving Infeasibility in Term Rewriting. Information Processing Letters, 136:90-95, 2018.