

CoScart

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Confluence Tool written in Scala

- ▶ One-man project
- ▶ Developed by Karl Gmeiner
- ▶ Scala: Functional object-oriented language, based on Java

Based on Scart

- ▶ Library for (conditional/higher-order) rewriting
- ▶ Originally developed in Java
 - ▶ Converted to Scala mainly for CoScart
- ▶ Rewriting using DAGs
- ▶ Higher-order rewriting
- ▶ Termination prover
 - ▶ Dependency pairs
 - ▶ some-more-heuristics for argument filterings
 - ▶ Sufficient for all terminating TRSs in Cops

CoScart

Due to early development stage only small set of methods

Methods for TRSs

0. Split into TRSs with distinct signature
1. Termination 1.1. Knuth-Bendix using rewrite engine
2. Left-linear 2.1. (Weakly orthogonal) 2.2. Development-closed overlaps/overlay

Methods for oriented 3-CTRSs

- ▶ Level-confluence
 - ▶ Orthogonal, right-stable and properly oriented 3-CTRSs
- ▶ Transformation of [Gmeiner, Nishida 2014]
 - ▶ First transform into constructor system
 - ▶ Next, structure-preserving derivation
 - ▶ Better properties towards confluence than unravelings

Perspectives

- ▶ More methods for TRSs
- ▶ Infeasibility check for conditional critical pairs
- ▶ Higher-order systems
- ▶ Distinction confluence \Leftrightarrow operational confluence
- ▶ Termination prover “TeScart”?