Termination Competition 2016

September, 2016. Obergurgl
The Halting Problem

The longer it keeps you waiting the more you appreciate a termination analysis.
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History of the Termination Competition

- Started in 2003.
- From 2004 to 2009: executed online on all benchmarks
- From 2009 on: random selection of benchmarks
- From 2010 on: Live execution during a conference.
- 2014: First time running under StarExec
Competition Committees

- Steering Committee
  Jürgen Giesl, RWTH Aachen, Germany
  Frederic Mesnard, Université de la Réunion, France
  Albert Rubio, UPC BarcelonaTech, Spain
  René Thiemann, Universität Innsbruck, Austria
  Johannes Waldmann, HTWK Leipzig, Germany

- Organizing Committee
  - Johannes Waldmann, HTWK Leipzig, Germany (StarExec)
  - René Thiemann, Universität Innsbruck, Austria (CPF)
  - Akihisa Yamada, Universität Innsbruck, Austria (TPDB)
Formalisms and languages

- **Rewriting (and Transition systems)**
  - TRS (Standard, Context-Sensitive, Higher-Order, Integer, Cycles,...)
  - String Rewrite Systems
  - Integer Transition Systems

- **Programming Languages**
  - C, Integer C, Java, Haskell, Prolog.
Competition Meta-Categories and participants

- Termination of Rewriting (and Transition Systems)
  - Different kinds of rewriting
  - Rewriting strategies
  - Certified categories

  Participants: AProVE, NaTT, TTT2, muterm, MultumNonMulta, matchbox, VeryMax, cycksrs, Ctrl, CycNTA, Wanda

- Complexity of Rewriting (and Transition Systems)
  - Runtime complexity and Derivational complexity (TRS)
  - Certified categories
  - Complexity of integer transition systems

  Participants: AProVE, TcT, Loopus, CoFloCo
Competition Meta-Categories and participants

- **Termination of Programs**
  Participants: AProVE, UltimateBuchiAutomizer, VeryMax

- **Complexity of Programs**
  Participants: AProVE, CoFloCo, Loopus, TcT
Running Competition

- Third time running under StarExec Platform.
  - It provides the needed storage and computing infrastructure (150 nodes).
  - But many technical problems have been appearing over the last two years.

- Benchmarks taken form the Termination Problem Data Base (TPDB).

- Timeouts
  complexity and termination of rewriting and transition systems: 30 s
  complexity and termination of programs: 300 s

- Only categories with at least two participants are run in the life competition.

The rest of categories will be run afterwards.
Competition Data

- 15 tools
- > 16,000 problems from the TPDB (benchmarks library)
- 150 execution nodes (StarExec).
- ~ 3 hours of live execution (expected!)
- CeTA is the certifier in use (Christian Sternagel, René Thiemann and Harald Zankl)
Competition life results

Termination Competition 2015

General Information wc = 300 a = 1 b = 1 c = 0.1 (2015-08-05 18:48:18.60928 UTC ) 51787 pairs, 12024541.5 / 6232857.3 s finished in 399686h 5m 50s

Termination of Term Rewriting (and Transition Systems) finished in 399686h 5m 50s, 33684 pairs, 672808.6 / 3493948.5 s


Termination Competition 2015 data is produced on StarExec at UIowa, and aggregated on star-exec-presenter at F-IMN, HTWK Leipzig.
Acknowledgments

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Acknowledgments

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