MU-TERM

2018 Termination Competition

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WST, July 2018, Oxford (UK)

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**Overview**

**MU-TERM 5.18** is a tool which can be used to verify a number of termination properties of variants of Term Rewriting Systems (TRSs) using different variants of the Dependency Pair (DP) Framework.
Backends

- **NLSOL**: NonLinear aritmetic SOLver
  - Used to generate (matrix) polynomial interpretations over \( \mathbb{Q} \).
- **Barcelogics**: SMT Solver
  - Used to generate (matrix) polynomial interpretations over \( \mathbb{N} \) and \( \mathbb{Z} \).
- **AGES**: Semantic-based automatic generator of logical models.
  - Used to generate piecewise (matrix) polynomial interpretations over convex polytopic domains over \( \mathbb{Z} \).


## Results in Termination Competition 2018

<table>
<thead>
<tr>
<th>Category</th>
<th>Position</th>
<th>Solved</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRS Standard</td>
<td>4th</td>
<td>832/1498</td>
</tr>
<tr>
<td>SRS Standard</td>
<td>5th</td>
<td>136/1541</td>
</tr>
<tr>
<td>TRS Equational</td>
<td>2nd</td>
<td>63/76</td>
</tr>
<tr>
<td>TRS Conditional</td>
<td>1st</td>
<td>101/117</td>
</tr>
<tr>
<td>TRS Context-Sensitive</td>
<td>1st</td>
<td>101/108</td>
</tr>
<tr>
<td>TRS Innermost</td>
<td>2nd</td>
<td>208/366</td>
</tr>
</tbody>
</table>
Conclusions and Future Work

- Most successful tool for proving termination of conditional TRSs and context-sensitive TRSs.
- In the TRS Conditional category we integrated the generation of convex polytopic domains using AGES.
- In our next version we want to fully integrate AGES in the rest of categories.