

FLoC Olympic Games 2014

Citius, Maius, Potentius — Faster, Bigger, More Powerful

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Answer Set Programming Competition



The Answer Set Programming Competition 2014 (ASPCOMP'14)



- ▶ Answer Set Programming (ASP) is a declarative approach to Knowledge Representation and Reasoning
- ▶ Wide range of applications from AI, real world and industry (e.g. product configuration, decision support systems, team building)
- ▶ Strengths:
 - ▶ expressive representation language for problems up to 2nd PH level
 - ▶ compact (first-order) encoding of problems
 - ▶ availability of robust and effective solvers

The number of ASP applications is further increasing



We need even more efficient ASP systems!



Answer Set Programming: 3-colorability problem



ASP program:

- ▶ facts representing problem instance, plus
- ▶ encoding specifying how a solution looks like

```
% A graph containing three nodes and three edges
```

```
node(1). node(2). node(3).
```

```
edge(1,2). edge(2,3). edge(3,1).
```

```
% Declaration of three colors
```

```
col(red). col(green). col(blue).
```

```
% Each node has some color
```

```
color(X,red) | color(X,green) | color(X,blue) :- node(X).
```

```
% Neighboring nodes must not share a color
```

```
:- edge(X,Y), col(C), color(X,C), color(Y,C).
```



- ▶ 28 problem domains taken from past ASPCOMPs (mainly 2013)
- ▶ Problem encodings of past events, plus updated encodings
- ▶ 16 solvers, either updates of 2013 entries or new, by 3 teams from Aalto University, University of Calabria, and University of Potsdam
- ▶ 4 Tracks based on:
 - ▶ ASP-Core-2 standard language features, e.g., “basic” programs, aggregates, choice rules, presence of query
 - ▶ problem complexity w.r.t. optimization, Beyond NP problems
- ▶ Distinction between single-processor and multi-processor solvers



ASPCOMP'14: Winners



- ▶ 3rd Prize: WASP ver. 1.5
(University of Calabria)



- ▶ 2nd Prize: LP2NORMAL2+CLASP
(Aalto University)

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Thank you, FLoC, ICLP
Thank you, TK
Thank you, participants