Intelligent Constraint Programming: Algorithm Selection for Fun and Profit

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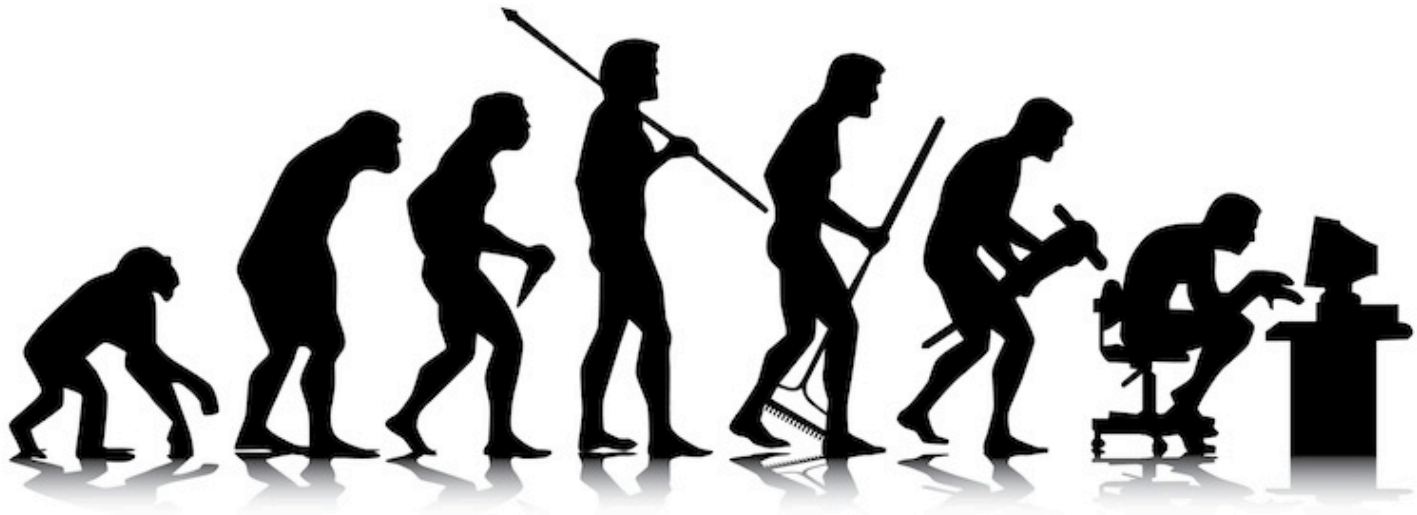
http://www.minizinc.org/software.html#flatzinc

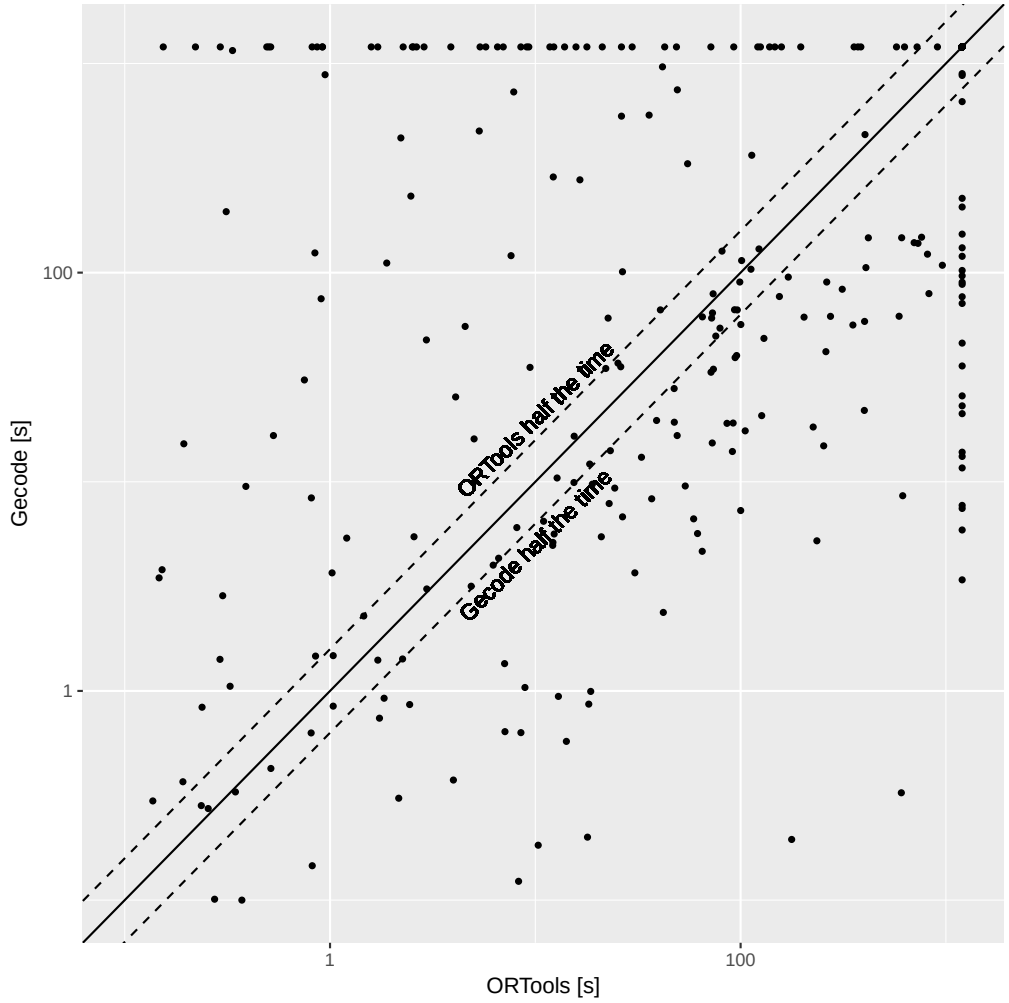
FlatZinc implementations

The MiniZinc library contains direct interfaces to COIN-OR CBC, Gurobi and IBM ILOG CPLEX. Furthermore, the following projects have developed FlatZinc interfaces:

- Gecode/FlatZinc. The generic constraint development environment provides a FlatZinc interface. The source code for the interface stripped of all Gecode-specific code is also available.
- Chuffed. A C++ FD solver using lazy clause generation.
- Choco 3. A Java FD solver.
- ECLiPSe. The ECLiPSe Constraint Programming System provides support for evaluating FlatZinc using ECLiPSe's constraint solvers. MiniZinc models can be embedded into ECLiPSe code in order to add user-defined search and I/O facilities to the models.
- HaifaCSP. A C++ FD solver using SAT solving algorithms.
- JaCoP. A Java-based constraint solver with an interface to FlatZinc (from version 4.2).
- MinisatID. An implementation of a search algorithm combining techniques from the fields of SAT, SAT Module Theories, Constraint Programming and Answer Set Programming, has an interface to FlatZinc.
- Mistral 2.0. A C++ FD solver.
- Opturion CPX. A Constraint Programming solver with eXplanation system, has an interface to FlatZinc.
- OR-Tools. A set of Operations Research tools developed at Google.
- OscaR/CBLS. A FlatZinc interface to the Constraint Based Local Search component of the OscaR toolkit.
- Picat CP/SAT.
- SICStus Prolog. Includes a library for evaluating FlatZinc (from version 4.0.5).
- SCIP. A framework for Constraint Integer Programming, has an interface to FlatZinc.
- Yuck. A local search solver with an interface to FlatZinc.



MiniZinc challenge



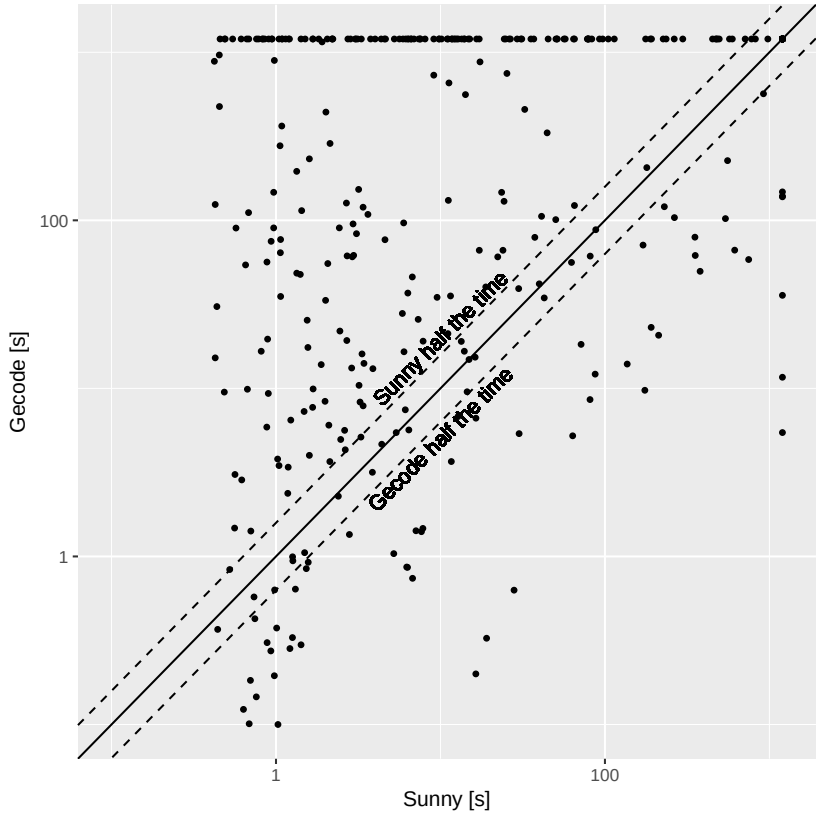
Stuckey, Peter J., Thibaut Feydy, Andreas Schutt, Guido Tack, and Julien Fischer. "The MiniZinc Challenge 2008-2013." AI Magazine 35, no. 2 (2014): 55–60.

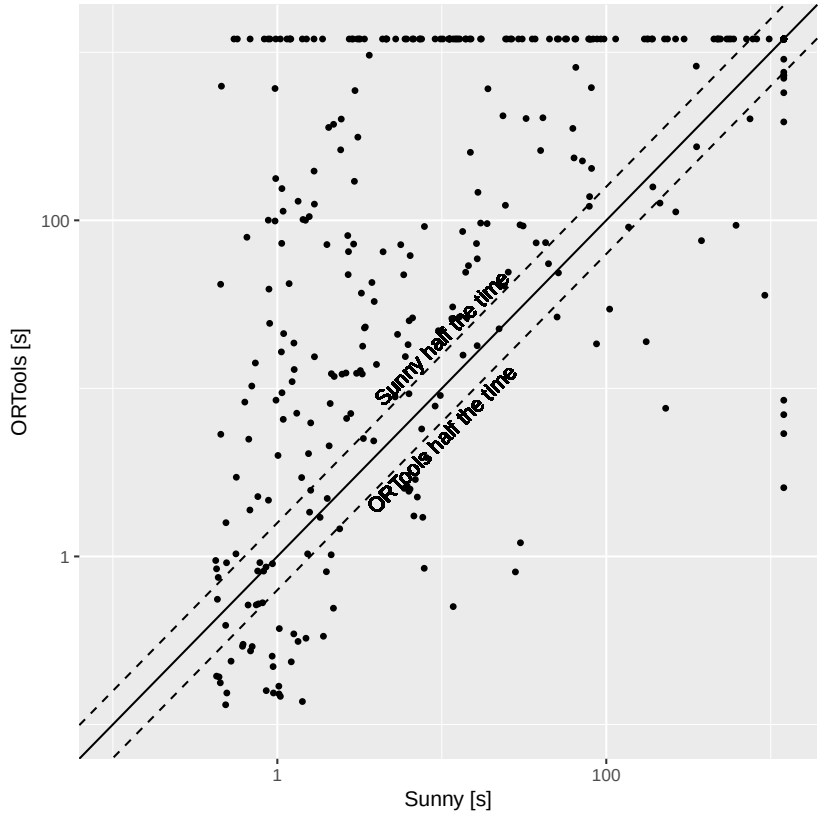
Algorithm Selection to the Rescue!

Algorithm Selection to the Rescue!

- Sunny

MiniZinc challenge





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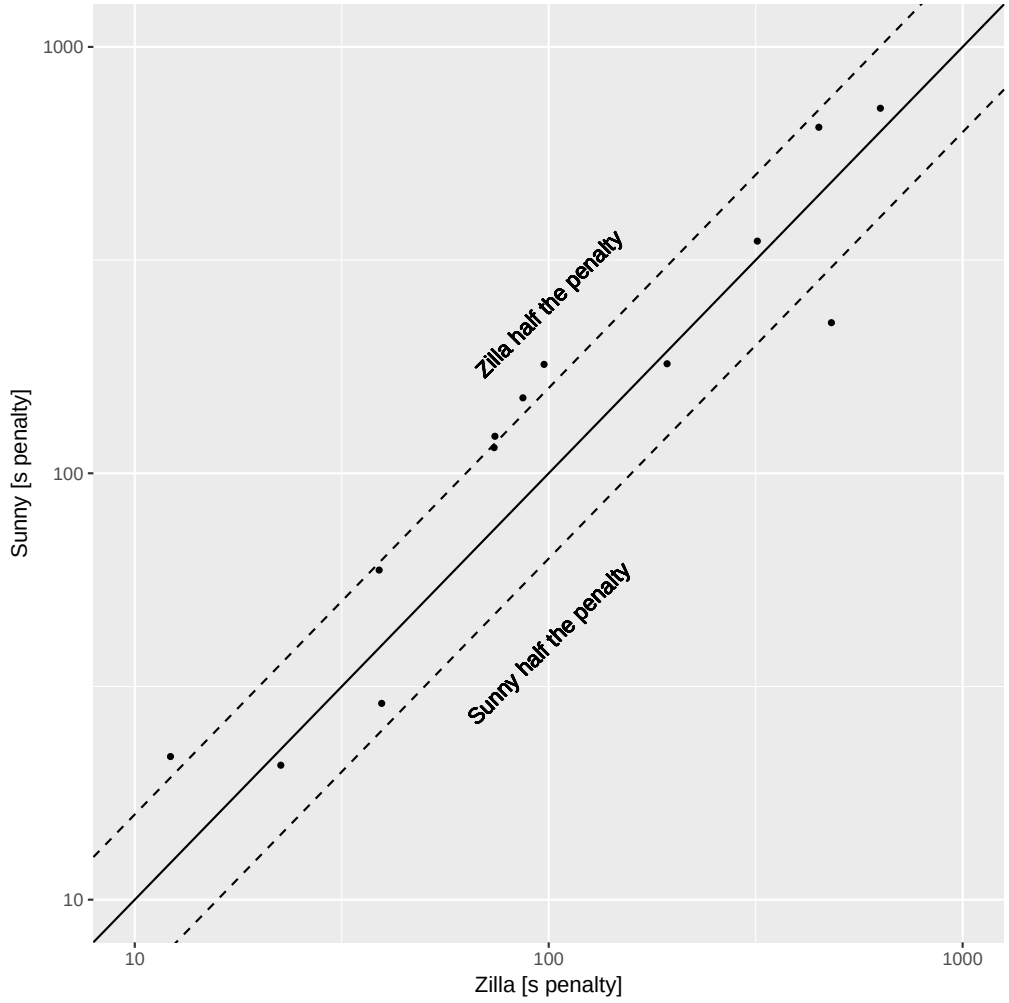
- ...

Algorithm Selection challenge



Kotthoff, Lars, Barry Hurley, and Barry O'Sullivan. "The ICON Challenge on Algorithm Selection." AI Magazine 38, no. 2 (2017).

Challenges

- Algorithm Selection in every solver!

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Go Forth and Constrain!

I'm hiring!

several funded PhD positions available, focus on algorithm selection and configuration, meta-learning, combinatorial problems

(not the view from my office)