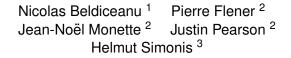
Research Challenges and Remarks on CP



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CP 2012 Panel: *The Future of CP* 12 October 2012



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Questions

- Automata: Propagate by declarative automaton generators
- Verification: Verify propagator properties (correctness, etc)
- Synthesis: From a declarative constraint specification:
 - Generate a (solver-independent) propagator
 - Generate a visualiser
 - Generate explanations (also from a high-level propagator)

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 Scalability: Design propagators that perform limited propagation (while satisfying some side constraints) The Global Constraint Catalogue was enriched with a lot of meta data: the latest working version is always at http://www.emn.fr/z-info/sdemasse/aux/doc/catalog.pdf and currently has 3,289 pages.

A community effort should now be started to:

- Identify more core concepts (such as ALLDIFFERENT)
- Define derived concepts applying across all core concepts (generalisation, specialisation, open and soft variants, ...)
- Maintain links to modelling languages and libraries

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Towards the Development of Sustainable CP Solvers

- Promote source code to be associated with submitted and published papers on algorithms; see for instance Prosser's Technical Report 2012-333
- Promote open-source solvers, such as Choco, ECLiPSe, Gecode, JaCoP, and Minion
- Promote solver-independent algorithms
- Promote declarative propagator descriptions

Interface of CP with Other Computer Science Areas

- Organise out-reach meetings with experts of CS areas, such as *CP meets ML* and *CP meets CAV*
- Develop on-line material explaining CP to CS experts
- Maintain a showcase of significant benchmarks where:
 - CP solvers outperform other solvers
 - CP practitioners challenge practitioners of other solvers

Cooperation with at least the SAT, SMT, MIP communities

Limit impact of absence of standard interface to CP solvers

- Where can CP make significant contributions? Integration of combinatorial problem solving technologies (CP, LS, MP, SMT, ...)
- What technical steps are needed for such contributions? Compilers and interpreters of declarative formulae for the different technologies
- What would CP offer compared to other technologies? Versatility: different models, inference, search, etc

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