

**Report on the Joint Workshop on
Implementation of Constraint Logic Programming Systems and
Logic-based Methods in Programming Environments
(CICLOPS-WLPE 2010)**

July 15, 2010

Germán Vidal, Universidad Politécnica de Valencia, Spain
Neng-fa Zhou, The City University of New York, NY, USA

The Joint CICLOPS-WLPE Workshop aimed at bringing together, in an informal setting, people involved in research on the design and implementation of logic and constraint programming languages and systems as well as on logic-based methods and tools which support program development and analysis.

The first joint workshop was held on July 14, 2009, in Pasadena, CA, USA, as a satellite event of the 25th International Conference on Logic Programming (ICLP 2009). Prior workshop meetings were held separately. The synergies between the CICLOPS and WLPE goals led to the joint workshop series to continue the momentum produced by the prior meetings, and to provide a forum to exchange new research. The CICLOPS series of workshops started in 1993 and traditionally focused on the implementation of constraint logic programming. The first WLPE workshop took place on October 20, 1989, in Cleveland, Ohio (USA), on the occasion of the North American Conference on Logic Programming 1989, and focused on practical logic-based software development methods and tools.

CICLOPS-WLPE 2010 was held in Edinburgh, as a satellite event of ICLP, the 26th International Conference on Logic Programming, as part of the Federated Logic Conference (FLoC 2010). This year, CICLOPS-WLPE attracted 32 participants and featured two invited talks by Michael Codish (Ben-Gurion University of the Negev, Israel) and Naoyuki Tamura (Kobe University, Japan), and 9 contributed papers. Both invited talks were concerned with SAT solving, though from a complementary point of view. Naoyuki Tamura's talk, *Solving Constraint Satisfaction Problems by a SAT Solver*, focused on implementation techniques of the Sugar solver. He showed that order encoding is in general better than direct encoding for CSPs and Sugar's good performance for the all-different global constraint is attributed to a large extent to pigeonhole clauses. Michael Codish's talk, *Programming with Boolean Satisfaction*, focused on the relevance of the expertise in declarative, logic and constraint programming for the development of new SAT encoding techniques, particularly those which came up in the application to termination analysis as well as in other problems. The following contributed papers were also presented at the workshop:

- The paper *A Test Automation Framework for Mercury*, by Peter Biener, François Degraeve and Wim Vanhoof, presents a test automation frame-

work for Mercury programs that generates runnable Mercury code from a formalized test suite.

- The paper *Realizing evaluation strategies by hierarchical graph rewriting*, by Petra Hofstedt, discusses the realization of evaluation strategies for the concurrent constraint-based functional language CCFL within the translation schemata when compiling CCFL programs into the hierarchical graph rewriting language LMNTal.
- The paper *An extensible web interface for databases and its application to storing biochemical data*, by Nicos Angelopoulos and Paul Taylor, presents a generic web-based database interface implemented in Prolog and demonstrates its applicability in providing access to integrated biochemical data.
- The paper *Meta-Predicate Semantics*, by Paulo Moura, describes and compares design choices for meta-predicate semantics, as found in representative Prolog module systems and in Logtalk. In particular, the paper looks at the consequences of these design choices from a pragmatic perspective.
- The paper *Portability of Prolog Programs: Theory and Case-studies*, by Jan Wielemaker and Vítor Santos Costa, discusses portability of Prolog systems, in particular portability issues between SWI-Prolog and YAP, and shares the experience in porting Alpino, a dependency-tree parser suite, to SWI-Prolog.
- The paper *DNF Sampling for ProbLog Inference*, by Dimitar Shterionov, Angelika Kimmig, Theofrastos Mantadelis and Gerda Janssens, proposes an approximate inference method based on DNF sampling for ProbLog and reports, disappointedly, that program sampling, the existing inference method implemented in ProbLog, outperforms DNF sampling.
- The paper *Distributed Work Stealing for Constraint Solving*, by Vasco Pedro and Salvador Abreu, presents a preliminary prototype of a CSP solver which splits search space among a set of workers. While the reported results are preliminary, the solver can serve as a nice basis for future developments.
- The paper *Casting the WAM as an EAM*, by Paulo André and Salvador Abreu, presents an implementation of the Extended Andorra Model (EAM) by altering the back end of a sequential WAM compiler. The question that how well an EAM implementation can perform without an EAM-specific front end is left unanswered.
- The paper *Logic Programming Foundations of Cyber-Physical Systems*, by Gopal Gupta and Neda Saeedloei, argues that logic programming is very suitable for cyber-physical systems, also referred to as embedded systems, in particular, CLP for modeling continuous physical quantities, co-induction for modeling perpetual execution, and coroutining for modeling concurrency.