

Special issue of the 22nd RCRA International Workshop on “Experimental Evaluation of Algorithms for Solving Problems with Combinatorial Explosion”

Preface

This special issue of *Fundamenta Informaticae* publishes extended and revised versions of the best papers orally presented at the 22nd RCRA International Workshop (RCRA 2015).¹ This event follows the series of the RCRA (the working group of the AI*IA association on Knowledge Representation and Automated Reasoning) annual meetings, held since 1994, and that from 2007 became an international workshop.

RCRA 2015 was held in Ferrara, Italy, on 22 September 2015 as a satellite workshop of the 14th Conference of the Italian Association for Artificial Intelligence (AI*IA 2015). The success of all these events shows that RCRA is nowadays established as a major forum for exchanging ideas and proposing experimentation methodologies for algorithms in Artificial Intelligence.

Many problems in Artificial Intelligence (AI) show an exponential explosion of the search space. Although stemming from different research areas in AI, such problems are often addressed with algorithms that have a common goal: the effective exploration of huge state spaces. Many algorithms developed in one research area are applicable (with the needed modifications) to other problems, or can be hybridised with techniques in other areas. AI tools often exploit or hybridise techniques developed by other research communities, such as Operations Research.

In recent years, research in AI has more and more focused on experimental evaluation of algorithms, the development of suitable methodologies for experimentation and analysis, the study of languages and the implementation of systems for the definition and solution of problems.

Scope of the workshop is fostering the cross-fertilisation of ideas stemming from different areas, proposing benchmarks for new challenging problems, comparing models and algorithms from an experimental viewpoint, and, in general, comparing different approaches with respect to efficiency, problem modeling, and ease of development.

Since the 2005 edition, the RCRA workshops have focused on the theme of algorithms in AI, proposing benchmarks to compare them and study their efficiency through experimental evaluation. These meetings have reached the objective to put together researchers coming from AI fields as diverse

¹<http://rcra.aixia.it/rcra2015>.

as constraint satisfaction, machine learning, logic languages, (quantified) satisfiability, planning and scheduling, just to name a few. The event has gained more and more interest, first from the Italian community, then from the international one.

RCRA 2008 (Udine, Italy) was co-located with the International Conference on Logic Programming (ICLP 2008). RCRA 2009 (Reggio Emilia, Italy) was a workshop of the 11th Conference of the Italian Association for Artificial Intelligence (AI*IA 2009). RCRA 2010 (Bologna, Italy) was in association with the 7th International Conference on Integration of Artificial Intelligence and Operations Research Techniques in Constraint Programming (CP-AI-OR 2010). RCRA 2011 (Barcelona, Spain) was a workshop of the 22nd International Joint Conference on Artificial Intelligence (IJCAI 2011). RCRA 2012 (Rome, Italy) was held in association with the 12th AI*IA Symposium on Artificial Intelligence (AI*IA 2012). RCRA 2013 was held in Rome, Italy as an autonomous event. RCRA 2014 was held in Vienna, Austria, as a workshop of the Federated Logic Conference (FLoC 2014) and part of the Vienna Summer of Logic (VSL).

During the years, the success of the workshop series have led RCRA to become a major forum for exchanging ideas and proposing experimentation methodologies for algorithms in AI.

Starting from 2007, after each workshop edition, a special issue of a major International journal is published with extended and revised versions of the best papers, with a second round of fresh reviews involving additional reviewers with the goal of meeting the standard of journal publications and accept only the best submissions.

Concerning the 2015 edition, fourteen papers were presented at RCRA 2015. After the workshop, the authors had the possibility to submit extended versions of their papers for possible publication in this special issue. After two further rounds of reviews, the following seven papers were selected:

- *Evaluating Answer Set Programming with Non-Convex Recursive Aggregates*
by Mario Alviano.
- *An Experimental Study of Influence of Modeling and Solving Techniques on Performance of a Tabled Logic Programming Planner*
by Roman Barták and Jindřich Vondrážka.
- *Now or Never: negotiating efficiently with unknown counterparts*
by Toni Mancini.
- *SyLVaaS: System Level Formal Verification as a Service*
by Toni Mancini, Federico Mari, Annalisa Massini, Igor Melatti, and Enrico Tronci.
- *An Empirical Perspective on Ten Years of QBF Solving*
by Paolo Marin, Massimo Narizzano, Luca Pulina, Armando Tacchella, and Enrico Giunchiglia.
- *Modeling Variations First-Order Horn Abduction in Answer Set Programming*
by Peter Schüller.
- *Identifying and Exploiting Features for Effective Plan Retrieval in Case-Based Planning*
by Mauro Vallati, Ivan Serina, Alessandro Saetti, and Alfonso Emilio Gerevini.

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