Foreword

Editor's foreword

This special issue of the *Journal of Computer and System Sciences* is devoted to the general area of Knowledge Representation and Reasoning. The seven works presented here describe progresses made on a variety of problems and facets in the area, including decision making in multi-agent environments, formal specification and reasoning in business processes, query answering in description logics knowledge bases, efficient mechanism design in combinatorial auctions, probabilistic ontology matching, knowledge representation and synonymous theories.

The first paper, by Vincent Conitzer and Tuomas Sandholm, studies decision making under preferences in settings where externalities, that are, control variables influencing agents' decisions, are to be taken into account. A short conference version of this paper appeared in the Proc. of AAAI 2005. The second paper, authored by Shahar Dobzinski, Noam Nisan and Michael Schapira, provides fundamental results about designing truthful mechanisms in the context of combinatorial auctions. A preliminary version of this paper appeared in the Proc. of ACM STOC 2006. Diego Calvanese, Giuseppe De Giacomo, Maurizio Lenzerini and Riccardo Rosati are the authors of the third paper, dealing with the problem of answering queries over description logic ontologies using views. A preliminary version of this paper appeared in the Proc. of KR 2008. The fourth paper regards the problem of answering conjunctive queries over description logic knowledge bases exploiting knots, and was authored by Thomas Eiter, Magdalena Ortiz and Mantas Simkus. Some results presented in this paper appeared, in preliminary form, in conference papers in the Proc. of AAAI 2008 and those of DL 2008. The fifth paper, by David Pearce and Agustine Valverde, proposes and analyses the notion of synonymy of logical theories based on distinct reference vocabularies. A preliminary version of this paper appeared in the informal proceedings of the CENT 2007 workshop. The sixth paper, authored by Sivan Albagli, Rachel Ben-Eliyahu-Zohary and Solomon E. Shimony, deals with the problem of matching ontologies using a technique based of Markov networks. A preliminary version of this paper appeared in the Proc. of IJCAI 2009. Finally, the seventh paper, by Alessandro Armando, Enrico Giunchiglia, Marco Maratea and Serena E. Ponta, illustrates how an action-based language can be profitably adopted to carry out the formal specification of businesses processes under authorization constraints and to reason about them.

While the authors were invited to submit their papers to this special issue, all papers went through the standard refereeing procedures of this journal. I would like to thank the authors of articles for contributing their nice work to this issue. Thanks also both to Professor Edward Blum, Editor-in-Chief of the *Journal of Computer and System Sciences*, and to Professor Georg Gottlob, *JCSS* Associate Editor for having invited me to serve as the Guest Editor of this special issue: I really enjoyed it. A special thank goes to the referees for their diligent work that was fundamental for improving the quality of the papers that were originally submitted.

This special issue is dedicated to the memory of Marco Cadoli, a talented colleague and a delightful person who left us more than four years ago, at the age of 40. Marco was a well-known and respected computer scientist who made a number of important contributions to the area of Knowledge Representation and Reasoning on such relevant themes as those of Algorithms and Complexity in Reasoning, Approximate Reasoning, Knowledge Compilation, Constraints programming, just to name a few. Besides his relevant contributions to the area, there is another accident I would like to mention that links Marco to this special issue, that is that Marco's first fundamental contribution to this research field was recorded in the paper "The Complexity of Propositional Closed World Reasoning and Circumscription" he co-authored with M. Lenzerini, which first appeared in the proceedings of AAAI 1990 under a slightly different title and then, in full, in vol. 48(2) of the Journal of Computer and System Sciences. I had the privilege to be a co-author and, above all, a close friend of Marco's. For this reason, I am really proud to find myself in the position to dedicate this special issue to his memory.

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