

Preface

This volume contains the papers presented at the Ninth International Conference on Principles of Knowledge Representation and Reasoning. Knowledge representation and reasoning (KR&R) lies at the crossroads between artificial intelligence research and modern information technology driven by the World Wide Web. Its ambition is to pave the road to the possibility of storing, retrieving and exploiting human knowledge by means of computers in a rational and efficient way. It relies on a blend of logics, graphical representations, and other formal languages for representing and reasoning about one's and other agent's beliefs about time, space, motion, as well as more specific domains of interest. KR&R is multidisciplinary and brings together philosophers, linguists, and computer scientists. KR&R provides crucial foundation for a wide range of applications with tremendous potential economic impact.

KR&R conferences have established themselves as the major forum for discussing these issues, and every other year collect a representative selection of the most advanced work in the computational manipulation of knowledge. This tradition goes back to 1989, when Ray Reiter was Conference Chair for the first KR&R conference in Toronto. In 2004 we are proud to christen the best paper award the Ray Reiter Best Paper Award in his honor. This prestigious award is sponsored by *Artificial Intelligence: An International Journal*.

The high standard set at the conference's inception has been maintained throughout the years, and continues in 2004. This year has witnessed a significant increase of the number of submitted papers, the highest total in the past 10 years. We received 199 valid submissions from countries around the world, out of which 67 papers were duly selected. The high quality selection could not have been achieved without the invaluable help of our valiant Program Committee, who were significantly surprised and overloaded by the unexpectedly high number of submissions, and had to work right through the holiday season. We also gratefully acknowledge the help of many external referees, noted in the subsequent pages. Many of

these referees agreed at the last minute to turn reviews around in very short periods of time.

Papers presented at KR2004 span the traditional areas in the field, covering various kinds of logics, languages, reasoning algorithms, and formalisms dedicated to space, time, action, decision and belief, as well as progress on the representation of ontologies, system evaluations, and the formalization of various reasoning issues such as belief revision, information merging, and argumentation. Continuing a fruitful tradition initiated in 2000, the final day of KR2004 is co-organized with the ICAPS2004 planning conference, where papers that lie in the intersection of both conferences are presented with the goal of cross-fertilizing the two areas. The corresponding papers are published in both proceedings. In addition, KR2004 and ICAPS have organized a joint festival which includes the inaugural KR&R Doctoral Consortium.

KR2004 initiates what we hope will be a long-standing series of invited talks on "Great Moments in Knowledge Representation," where pioneers of KR&R are invited to shed light on the history of the field they helped to create, and to provide their own view on future developments. The first two of these talks will be given by John McCarthy and William Woods. Two more invited talks will be presented by Itzhak Gilboa, who bridges the gap between knowledge representation, decision theory and economics, and Peter Patel-Schneider, who was a major contributor to the development of the semantic web language OWL. Lastly, Patrick Doherty, whose career has included outstanding achievements in both KR and planning, was the perfect choice to start off our joint day with ICAPS.

Finally, three workshops will take place around KR2004 on description logics, nonmonotonic reasoning, and biomedical knowledge representation.

Enjoy the event, fun, and scholarship filled week in the beautiful setting of Whistler Resort!

– Didier Dubois and Chris Welty, *Program Chairs*
– Mary-Anne Williams, *Conference Chair*

Acknowledgements

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We would like to thank the rest of the KR2004 Organization Committee: Local Arrangement Chair: Jim Delgrande, Treasurer: Alankar Karol, Doctorial Symposium Chairs: Sheila McIlraith and Leora Morgenstern, and Workshops Coordination Chair: Sheila McIlraith. We are also grateful for the efforts of the following people: Dallas Marchant, Chris Stanton, and Suku Sinna.

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Thanks to the invited speakers for enhancing the conference reputation: Patrick Doherty, Itzhak Gilboa, John McCarthy, Peter Patel-Schneider, William Woods.

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