Preface

This volume contains the papers accepted for presentation at ICAPS 2011, the Twenty-First International Conference on Automated Planning and Scheduling, held in Freiburg, Germany, on June 11–16, 2011. The annual ICAPS conference series was established in 2003 through the merger of two pre-existing biennial conferences, the International Conference on Artificial Intelligence Planning and Scheduling (AIPS) and the European Conference on Planning (ECP). ICAPS continues the traditional high standards of AIPS and ECP as an archival forum for new research in the rapidly developing field of automated planning and scheduling.

Building on the experience of recent ICAPS conferences, the ICAPS 2011 call for papers solicited submissions of both full technical papers and short papers. Both types of submissions were reviewed using the same rigorous process, but based on slightly different criteria. Full technical papers were reviewed based on the standard criteria of clarity, relevance, significance, originality, and soundness. These are papers that are expected to convey substantial technical contributions to the field, properly placed in the context of existing work. Short papers are devoted to new research or other issues of interest to the ICAPS community. Examples of work reported in short papers include novel ideas that are not yet fully developed or whose scope is not large enough for a full paper, important implementation techniques, novel interesting benchmark problems, focused experimental studies, interesting applications that are not yet completely solved or analyzed, position or challenge papers, and so on.

For ICAPS 2011, we received 138 submissions by authors from 31 countries. We are especially proud that ICAPS 2011 was blessed with extremely high quality submissions continuing the tradition established by previous conferences in the series. Of these submissions, 109 were full technical papers, and 29 were short papers. These papers were reviewed by a program committee made up of 110 members, assisted by 27 additional external reviewers, and coordinated by 10 senior program committee members along with the program chairs. As a result of this evaluation, 47 papers were accepted: 38 full papers (34.9 percent), and 9 short papers (31 percent).

From this excellent collection of papers, four were selected for special recognition. "Automatic Construction of Efficient Multiple Battery Usage Policies" by Maria Fox, Derek Long, and Daniele Magazzeni was selected for the Best Paper Award, and "Planning to Perceive: Exploiting Mobility For Robust Object Detection" by Javier Velez, Garrett Hemann, Albert Huang, Ingmar Posner, and Nicholas Roy was selected for the Best Student Paper Award. Two additional papers, "Computing All-Pairs Shortest Paths by Leveraging Low Treewidth" by Léon Planken, Mathijs de Weerdt, and Roman van der Krogt, and "Trade-Offs in Sampling-Based Adversarial Planning" by Raghuram Ramanujan and Bart Selman, were selected for honorable mention for the Best Student Paper Award.

All accepted papers were presented orally at the conference. The program of the conference also featured three invited talks, eight workshops, seven tutorials, and a systems demo track. The invited talks addressed spoken dialog systems as an application for planning under uncertainty, computational challenges posed by natural disaster preparedness and recovery, and empirical game-theoretic analysis and the behavior of software agents. They were given by three distinguished scientists, in order: Jason D.

Williams (AT&T Labs), Pascal Van Hentenryck (Brown University), and Michael P. Wellman (University of Michigan).

Traditionally, students occupy a central role at ICAPS, and two special events were organized at ICAPS 2011 to acknowledge their importance. First, ICAPS 2011 continued the tradition of featuring a Doctoral Consortium, providing PhD students in the field an opportunity to present and discuss their ongoing research in both a dedicated, full-day event held on June 11, as well as at a poster session during the main conference. Second, ICAPS 2011 featured ECCAI's Fourteenth Advanced Course on AI (ACAI). This course preceded the conference activities and it was specifically devoted to Automated Planning and Scheduling featuring an intensive four-day educational program attended by more than fifty graduate students and young researchers. Organized by Michael Brenner, Malte Helmert, Bernhard Nebel, and Gabriele Röger (all from University of Freiburg, Germany), the course comprised lectures by ten experts in various aspects of the field, covering a wide range of topics from theoretical aspects of planning and scheduling to empirical methods and methodologies to application challenges.

Also associated with ICAPS 2011 was the Seventh International Planning Competition, or IPC 2011 for short. The goals of this event include analyzing and advancing the state of the art in automated planning systems, emphasizing new research issues in planning, and promoting the acceptance and applicability of planning technology. IPC 2011 featured three subcompetitions, and the variety of problems considered in these different competitions both reflects and spurs progress in the field. The deterministic competition, organized by Ángel García Olaya, Carlos Linares López, and Sergio Jiménez Celorrio (all from Universidad Carlos III de Madrid, Spain) was devoted to fully deterministic and observable (also known as "classical") planning. The uncertainty competition, organized by Scott Sanner (NICTA and the Australian National University) and Sungwook

Yoon (Palo Alto Research Center), considered planning with probabilistic actions in fully observable and partially observable domains. The learning competition, organized by Sergio Jiménez Celorrio (Universidad Carlos III de Madrid, Spain), Amanda Coles, and Andrew Coles (both from University of Strathclyde, UK), considered planning using domain-dependent knowledge that is automatically extracted during an offline training period. The results for all three competitions were presented at a special event during the conference.

We thank all members of the program committee, as well as our external reviewers, for their effort in the review process. Their diligence and expertise was critical for maintaining the high standards that the ICAPS series has become known for. We also thank those involved in the various aspects of the organization of ICAPS 2011: Gabriele Röger (local arrangements chair), Jeremy Frank and Bernhard Nebel (sponsorship chairs), Piergiorgio Bertoli and Minh Do (system demo chairs), Blai Bonet and Amedeo Cesta (workshop chairs), Stephen Smith and Rong Zhou (tutorial chairs), Héctor Geffner, Patrik Haslum, and Subbarao Kambhampati (doctoral consortium chairs), Ari Jónsson and Jana Koehler (industry liaisons). Finally, we thank the ICAPS council, for supporting our efforts in organizing ICAPS 2011, and most importantly, the planning and scheduling community who supported this event by submitting their work and participating actively in it.

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Stefan Edelkamp, Malte Helmert
ICAPS 2011 Chairs