

Preface

The annual *International Conference on Automated Planning and Scheduling (ICAPS)* is the premier forum for theoretical and applied research in automated planning and scheduling. It brings together researchers, students, technology developers, and application builders from around the world to disseminate recent technical advances, and to discuss the application of planning and scheduling technologies in challenging problem domains. ICAPS 2005 is the fifteenth edition in this series.

ICAPS 2005 received 93 submissions, of which the program committee selected 33 papers for presentation at the conference and publication in this volume. ICAPS papers traditionally cover a broad spectrum of topics in the field. This year, we saw a variety of contributions addressing a range of important applications. They include Web services composition, plan generation for cyber security, sport scheduling, manufacturing, and the exciting domain of planetary exploration. Search for planning and scheduling continues to play a prominent role in the field. Six papers, including the best conference paper, are devoted to this topic. Another trend is the steady increase in the number of scheduling papers submitted to and accepted for ICAPS: this year, we reached a ratio of 25 percent. The volume also contains a number of papers on temporal and anytime planning, planning under uncertainty, learning of domain models, and model checking techniques for planning.

ICAPS 2005 awarded four best paper prizes. The best conference paper is co-

authored by Rong Zhou and Eric Hansen and entitled “Beam-Stack Search: Integrating Backtracking with Beam Search.” Two best student papers were awarded: “On the Tractability of Restricted Disjunctive Temporal Problems” by T. K. Satish Kumar, and “Characterizing the Distribution of Low-Makespan Schedules in the Job-Shop Scheduling Problem” by Matthew Streeter and Stephen Smith. A fourth distinguished paper prize was awarded to Wheeler Ruml, Minh Do, and Markus Fromherz, in recognition of the outstanding application presented in their paper “On-line Planning and Scheduling for High-speed Manufacturing.”

The ICAPS 2005 technical sessions are complemented by a comprehensive workshop and tutorial program. The workshops address several important and topical areas: “Mixed-initiative Planning and Scheduling,” “Multiagent Planning and Scheduling,” “Verification and Validation of Model-based Planning and Scheduling Systems,” “The Role of Ontologies in Planning and Scheduling,” “Plan Execution: A Reality Check,” “Planning under Uncertainty for Autonomous Systems,” and “Constraint Programming for Planning and Scheduling.” The ICAPS 2005 tutorials offer in-depth perspectives of scientific work on “Temporal and Resource Reasoning for Planning, Scheduling, and Execution,” “Hard and Soft Temporal Constraint Techniques for Scheduling Problems with Preferences and Uncertainty,” “Directed Model Checking,” and “Domain Modeling for Planning.”

By hosting the first *International Competition on Knowledge Engineering for Planning*

and Scheduling, ICAPS 2005 is focusing the community's attention on an important requirement for deploying planning and scheduling technologies, namely tool support for creating and maintaining domain knowledge. The competition aims to evaluate a range of tools that can facilitate knowledge engineering processes for automated planning and scheduling. The functions addressed by these tools include the acquisition of domain structures and domain heuristics, knowledge formulation and validation, planner configuration, and knowledge refinement.

One objective in organizing ICAPS 2005 was to broaden the scope of the conference to include related topics that lie outside the traditional boundaries of the community. In particular, we made a concerted effort to involve experts from the disciplines of constraint reasoning, knowledge acquisition, and verification and validation. By doing so, we hope to see an infusion of new ideas that will strengthen and diversify the field, thus enabling us to solve larger and more challenging planning and scheduling problems in the future. A second objective for the conference was to encourage strong participation by young researchers. The conference includes a Doctoral Consortium that provides a forum for students to present their work and receive feedback, as well as a generous scholarship program to enable broad student participation. In addition, several young researchers were invited to serve on the Program Committee for the conference.

Organizing a conference like ICAPS 2005 relies on the dedication of many people. Our most grateful thanks go to all of them: the authors, who submitted their papers; the members of the program committee and the additional reviewers, who provided nearly three hundred high-quality reviews in timely fashion; the organiz-

ing committee, the workshop organizers, and the tutorial speakers, who did an outstanding job in getting the many complementary events going; and—last but not least—our highly supportive local arrangements committee and the AAAI conference organization without whose efforts this event would not have been possible.

Finally, we would like to thank our organizations and the many generous sponsors for their support in making ICAPS 2005 a success.

– *Susanne Biundo,
Karen Myers,
& Kanna Rajan*