The Fifth Annual Symposium on Combinatorial Search

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Abstract. The purpose of the Symposium on Combinatorial Search (SoCS) is to promote the study and understanding of combinatorial search algorithms through the organization of scientific meetings, publications, tutorials, and other public scientific and educational activities. The most prominent among its activities is the Annual Symposium on Combinatorial Search that has been organized annually since 2008. This short paper introduces the most relevant accomplishments of the Fifth Annual Symposium (SoCS 2012), that was held in July 2012 in Niagara Falls, Canada.

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1. The Fifth Annual Symposium on Combinatorial Search

The Fifth Annual Symposium on Combinatorial Search was co-located with the AAAI 2012 conference and it provided continuity with the previous edition, SoCS 2011. For an introduction to SoCS 2011 and its organization the interested reader is referred to [1]. For example, it continued with the tradition of awarding outstanding contributions in the following categories: best paper award, best student paper award and best program committee award. This last award is voted on by authors who were allowed to produce feedback in the form of positive votes to their reviewers if they considered that their reviews were useful and accurate. In the end, Ethan Burns was named the best program committee member. The best paper award went to Guni Sharon, Roni Stern, Ariel Felner and Nathan Sturtevant for their work entitled “Meta-agent conflict-based search for optimal multi-agent path finding” and the best student paper was selected to be “Better parameter-free anytime search by minimizing time between solutions” by Jordan T. Thayer, J. Benton and Malte Helmert. This edition of SoCS also continued with the tradition of introducing a special scope. This year, it was the first edition of the Path Planning Competition.

This edition of SoCS received 55 submissions in total. In the end, 19 were accepted for oral presentation and 11 were accepted as posters. Besides these, 9 papers were published as abstracts. The main research topics covered in SoCS 2012 were: search, automated planning, robotics, constraint satisfaction and complexity analysis. Sessions focused on approaches that deal with all these topics, not only from a theoretical point of view but also from a practical point of view.
There were two invited talks. In the first one, Tristan Cazenave discussed recent progress in the field of single-agent Monte-Carlo search. In the second one, Stefan Edelkamp (who recently published a volume on heuristic search [2]) discussed some recent discoveries where comparing the performance of blind search versus heuristic search in some domains produced surprising results in favour of the former.

The conference was held with the support of the National Science Foundation and the Artificial Intelligence Journal. Besides, the AI Communications journal offered a fast-track and a number of full papers were selected for publication.

“Towards a theory of random walk planning: Regress factors, fair homogeneous graphs and extensions” by Hootan Nakhost and Martin Müller advances the study of automated planning using random walks by introducing several classes of graphs and characterizing key parameters that affect the performance of random walks in such graphs. Simplified versions of well-known planning benchmarks are used to illustrate connections between the graphs studied and actual planning problems.

The conference version of “Real-time heuristic search for motion planning with dynamic obstacles” by Jarad Cannon, Kevin Rose and Wheeler Ruml presented the first results obtained with two methods for path planning with dynamic obstacles which was assessed by the Program Committee as very interesting so that a longer version was offered.

Finally, the paper “Automatic move pruning for single-agent search” by Robert C. Holte and Neil Burch revisits an old idea to perform move pruning via Finite State Machines. Their method is more general and more applicable and it is a continuation of previous work also published at the preceding edition of SoCS. This longer version summarizes and extends both papers.

References