

Preface

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The 2010 Workshop on Abstraction, Reformulation, and Approximation (WARA-2010), scheduled to be held on July 12, 2010 in Atlanta, Georgia, USA in conjunction with AAAI-10, aims to provide a forum for intensive interaction among researchers in all areas of artificial intelligence and computer science with an interest in the different aspects of abstraction, reformulation, and approximation techniques. The goal and scope of this workshop are similar to an independent symposium called SARA. The diverse backgrounds of participants of previous SARA symposia has led to a rich and lively exchange of ideas, allowed the comparison of goals, techniques, and paradigms, and helped identify important research issues and engineering hurdles. This workshop continues to do the same.

It has been recognized since the inception of AI that abstractions, problem reformulations, and approximations (ARA) are central to human common-sense reasoning and problem solving and to the ability of systems to reason effectively in complex domains. ARA techniques have been used in a variety of problem-solving settings and application domains, primarily to overcome computational intractability by decreasing the combinatorial costs associated with searching large spaces.

In addition, ARA techniques are also useful for knowl-

edge acquisition and explanation generation.

Topics of interest for this AAAI workshop include all aspects of abstraction, reformulation and approximation, including (but not limited to) the following: new techniques for automatically constructing and selecting appropriate ARA methods; frameworks that unify and classify ARA techniques; empirical and theoretical studies of the costs and benefits of ARA; applications of ARA to search, constraint satisfaction, deterministic and probabilistic planning, theorem proving, logic programming, game playing, parallel and distributed search, distributed data and knowledge bases, internet search and navigation, knowledge compilation, knowledge acquisition, knowledge reformulation, simulation, design, diagnosis and control of physical systems (including mobile robots), automatic programming, analogical reasoning, case-based reasoning, reasoning under uncertainty, reinforcement learning, machine learning, and speed-up learning; and fielded applications demonstrating the benefits of ARA to a variety of real-world domains.

The eleven papers accepted to WARA-2010 span a variety of areas including satisfiability, state space abstraction, answer set programming, global constraints, search, knowledge compilation, clustering, and reinforcement learning.