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Argumentation in Multi-Agent Systems

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Revised Selected and Invited Papers

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Preface

This volume contains revised versions of the papers presented at the sixth edition of the International Workshop on Argumentation in Multi-Agent Systems, (ArgMAS 2009), held in Budapest, Hungary, in association with the 8th International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS 2009) in May 2009. Previous ArgMAS workshops have been held in New York City, USA (2004), Utrecht, The Netherlands (2005), Hakodate, Japan (2006), Honolulu, USA (2007) and Estoril, Portugal (2008). The event has now clearly established itself on the international calendar among researchers in computational argument and dialectics.

A brief word to explain these topics is in order. Different agents within a multi-agent system (MAS) potentially have differential access to information and different capabilities, different beliefs, different preferences and desires, and different goals. A key aspect of the scientific and engineering study of multi-agent systems therefore has been the development of methods and procedures for identifying, assessing, reconciling, arbitrating between, managing, and mitigating such differences. Market mechanisms and voting procedures are two methods for dealing with these differences. Argumentation is another. Argumentation can be understood as the formal interaction of different arguments for and against some conclusion (e.g., a proposition, an action intention, a preference, etc.). An agent may use argumentation techniques to perform individual reasoning for itself alone, in order to resolve conflicting evidence or to decide between conflicting goals it may have. Two or more agents may also jointly use dialectical argumentation to identify, express, and reconcile differences between themselves, by means of interactions such as negotiation, persuasion, inquiry, and joint deliberation.

In recent years, formal theories of argument and argument interaction have been proposed and studied, and this has led to the study of computational models of argument. The ArgMAS series of workshops has focused on computational argumentation within the context of agent reasoning and multi-agent systems. The ArgMAS workshops are of interest to anyone studying or applying: default reasoning in autonomous agents; single-agent reasoning and planning under uncertainty; strategic single-agent reasoning in the context of potential competitor actions; and the rational resolution of the different beliefs and intentions of multiple agents within multi-agent systems. There are close links between these topics and other topics within the discipline of autonomous agents and multi-agent systems, particularly: agent communications languages and protocols; game theory; AI planning; logic programming; and human–agent interaction.

The papers in this volume were selected for inclusion in the ArgMAS 2009 workshop following a peer-review process undertaken by anonymous reviewers, resulting in 15 papers being selected for inclusion in the workshop. We thank all

authors who made submissions to ArgMAS 2009, and we thank the members of the Program Committee for their efforts in reviewing the papers submitted. One innovation adopted at the 2009 workshop was the use of official pre-chosen respondents to offer short, prepared critiques to a number of the papers presented at the workshop. This innovation was borrowed from conferences in philosophy, where it is standard, and we found it worked very well. The comments of respondents, who each knew of their assignment ahead of time and so could make a careful reading of their assigned paper, better focused the discussions at the workshop, and led to improvements in the quality of the revised papers later published here. This volume also contains a paper from the invited keynote speaker at the workshop, prominent argumentation-theorist Douglas Walton of the University of Windsor, Canada. His talk presented and his paper reports on his current research exploring the burden of proof in deliberation dialogs. We were honored by Professor Walton's participation, and we thank him for giving the keynote address.

As in collections of papers at previous ArgMAS workshops, we have also invited several papers from the main AAMAS Conference of relevance to argumentation in multi-agent systems. There are three invited papers here: a paper by Guido Boella and colleagues, entitled, "Dynamics in argumentation with single extensions: attack refinement and the grounded extension"; a paper by Paul Doran and colleagues, entitled, "Using ontology modularization for efficient negotiation over ontology correspondences in MAS"; and, thirdly, a paper by Yuqing Tang and colleagues, entitled, "A model for integrating dialogue and the execution of joint plans."

We hope that you enjoy reading this collection.

February 2010   Peter McBurney
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