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Theory and Applications of Formal Argumentation

First International Workshop, TAFA 2011
Barcelona, Spain, July 16-17, 2011
Revised Selected Papers

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Preface

Recent years have witnessed a rapid growth of interest in formal models of argumentation and their application in diverse sub-fields and domains of application of AI, including reasoning in the presence of inconsistency, non-monotonic reasoning, decision making, inter-agent communication, the Semantic Web, grid applications, ontologies, recommender systems, machine learning, neural networks, trust computing, normative systems, social choice theory, judgement aggregation and game theory, and law and medicine. Argumentation thus shows great promise as a theoretically grounded tool for a wide range of applications.

TAFA-11, the First International Workshop on Theory and Applications of Formal Argumentation, aimed at contributing to the realization of this promise, by promoting and fostering uptake of argumentation as a viable AI paradigm with wide-ranging application, and providing a forum for further development of ideas and the initiation of new and innovative collaborations.

We invited submission of papers on: formal theoretical models of argumentation and application of such models in (sub-fields of) AI; evaluation of models, both theoretical (in terms of formal properties of existing or new formal models) and practical (in concretely developed applications); theories and applications developed through inter-disciplinary collaborations. We received 32 submissions, of which we accepted 9 as full papers and 12 as short papers. Extended and improved versions of all full papers are included in these proceedings, as well as extended and improved versions of eight short papers that were re-reviewed after the workshop.

The papers included in these proceedings cover the following topics:

- Properties of formal models of argumentation
- Instantiations of abstract argumentation frameworks
- Relationships among different argumentation frameworks
- Practical applications of formal models of argumentation
- Argumentation and other artificial intelligence techniques
- Evaluation of formal models of argumentation
- Validation and evaluation of applications of argumentation

In addition to paper presentations, the workshop also included an extended panel session on the topic: “The future of argumentation: what is its added value and how we communicate this to researchers in the artificial intelligence community and beyond.” The panel was conducted by three influential researchers in the area of formal argumentation: *Carlos Chesnevar* (Universidad Nacional del Sur, Argentina), *Martin Caminada* (Université du Luxembourg, Luxembourg), and *Stefan Woltran* (Vienna University of Technology, Austria). The panelists

addressed and debated (with one another and the workshop participants) the following questions:

1. Which main challenges do we need to face for argumentation theory to have a real impact on applications?
2. Are any of the argumentation systems currently available ready for deployment?
3. Have we identified suitable “killer” applications already? If not, which direction should we look at for a “killer” application?
4. Do we need any further theoretical developments to pave the way toward applications and if so in which direction?
5. Which “industry” is most likely to be receptive to our methodologies/techniques?
6. Would it be useful to “team up” with any other field (in AI, or computer science, or elsewhere) in order to have a higher impact/more powerful techniques?

The panel stirred a lively debate among the 25 or so workshop participants. Passions often ran high: a testament not to fundamental divisions within the community, but rather a desire to ensure that “we get things right” and so realize the promise of argumentation.

December 2011

Sanjay Modgil
Nir Oren
Francesca Toni

Organization

TAFa-11 took place at the Universitat de Barcelona, Barcelona, Catalonia (Spain) during July 16–17, 2011, as a workshop at IJCAI-11, the 22nd International Joint Conference on Artificial Intelligence.

Workshop Chairs

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VIII Organization

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Serena Villata	University of Turin, Italy
Simon Wells	University of Dundee, UK
Stefan Woltran	Vienna University of Technology, Austria

Additional Referees

Mark Snaith

Sponsoring Institutions

TAFa-11 was endorsed by the Agreement Technologies COST action.

Table of Contents

Theory and Applications of Formal Argumentation

Probabilistic Argumentation Frameworks	1
<i>Hengfei Li, Nir Oren, and Timothy J. Norman</i>	
Splitting Argumentation Frameworks: An Empirical Evaluation	17
<i>Ringo Baumann, Gerhard Brewka, and Renata Wong</i>	
On the Complexity of Computing the Justification Status of an Argument	32
<i>Wolfgang Dvořák</i>	
Arguments over Co-operative Plans	50
<i>Rolando Medellín-Gasque, Katie Atkinson, Peter McBurney, and Trevor Bench-Capon</i>	
An Implemented Dialogue System for Inquiry and Persuasion	67
<i>Luke Riley, Katie Atkinson, Terry Payne, and Elizabeth Black</i>	
An Argumentation Framework for Qualitative Multi-criteria Preferences	85
<i>Wietske Visser, Koen V. Hindriks, and Catholijn M. Jonker</i>	
Modeling and Solving AFs with a Constraint-Based Tool: ConArg	99
<i>Stefano Bistarelli and Francesco Santini</i>	
Resource Boundedness and Argumentation	117
<i>Nicolás D. Rotstein, Nir Oren, and Timothy J. Norman</i>	
An Empirical Study of a Deliberation Dialogue System	132
<i>Elizabeth Black and Katie Bentley</i>	
Selective Revision by Deductive Argumentation	147
<i>Patrick Krümpelmann, Matthias Thimm, Marcelo A. Falappa, Alejandro J. García, Gabriele Kern-Isberner, and Guillermo R. Simari</i>	
A Three-Layer Argumentation Framework	163
<i>Paulo Maio and Nuno Silva</i>	
Stable Extensions in Timed Argumentation Frameworks	181
<i>Maria Laura Cobo, Diego C. Martinez, and Guillermo R. Simari</i>	

Computing with Infinite Argumentation Frameworks: The Case of AFRAs	197
<i>Pietro Baroni, Federico Cerutti, Paul E. Dunne, and Massimiliano Giacomin</i>	
Multi-sorted Argumentation	215
<i>Tjitze Rienstra, Alan Perotti, Serena Villata, Dov M. Gabbay, and Leendert van der Torre</i>	
Conditional Labelling for Abstract Argumentation	232
<i>Guido Boella, Dov M. Gabbay, Alan Perotti, Leendert van der Torre, and Serena Villata</i>	
Bottom-Up Argumentation	249
<i>Francesca Toni and Paolo Torroni</i>	
A First Step towards Argumentation Dialogues for Discovery	263
<i>Xiuyi Fan and Francesca Toni</i>	
Author Index	281