Preface to the special issue: ISAIM 2016

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In 2016, we had the pleasure of chairing the International Symposium on Artificial Intelligence and Mathematics (ISAIM 2016) in Fort Lauderdale. ISAIM is a unique biennial event, which has been bringing together researchers working at the nexus of mathematics and artificial intelligence since 1990. The 2016 edition featured, in addition to an exceptional main track several interesting special tracks on: Boolean and Pseudo-Boolean Functions, Computational Approaches to Proof Construction, and Integrating Constraint Programming and Operations Research.

In this special issue, we showcase extended versions of some of the best papers presented at the symposium.

In *Sentence Entailment in Compositional Distributional Semantics*, by Mehrnoosh Sadrzadeh, Dimitri Kartsaklis and Esma Balkir, categorical compositional distributional semantics is studied as a model of entailment and it is shown that entropy-based distances can be lifted from the word level to the phrase and sentence level compositionally.

In *Complexity of Control by Partitioning Veto Elections and of Control by Adding Candidates to Plurality Elections*, Jorg Roth presents a comprehensive study on the complexity of control by partition, closing several open questions, which had been left open in the literature. The paper also identifies and addresses an issue with existing proofs on the parameterized complexity of control by adding candidates to plurality elections.

In *A New Causal Discovery Heuristic*, Steve Prestwich propose a new heuristic for inferring causality between continuous variables which overcomes several drawbacks of probabilistic models for causal discovery and is shown to perform equally well on several data sets.

Finally, in *On the computational complexities of models for uncertainty handling*, Piotr Wojciechowski studies the complexity of two mathematical programming paradigms widely used for program verification and uncertainty handling: Quantified Integer Programming

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(QIP) and Quantified Integer Implication (QII). The author also considers the complexity in the bounded and unbounded case and elucidates the connections between the two frameworks.

We would like to thank the authors for submitting their high quality contributions, the reviewers who provided insightful and constructive comments, and the attendees of the event. We believe this special issue well exemplifies the high quality of research, being carried out in this field, and we hope it will lay the ground for many lines of future work.

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