Special Issue on the 33rd Italian Conference on Computational Logic: CILC 2018

Preface

This special issue contains revised and extended versions of papers presented at the 33rd Italian Conference on Computational Logic – CILC 2018 – which was held in Bolzano, Italy, on September 20-22, 2018. CILC is the annual conference organized by GULP (Group of researchers and Users of Logic Programming). Since the first event of the series, which took place in Genoa in 1986, the annual GULP conference represents the main opportunity for Italian users, researchers and developers working in the field of computational logic to meet and exchange ideas. Over the years the conference broadened its horizons from the specific field of logic programming to include declarative programming and applications in neighboring areas such as artificial intelligence and deductive databases.

The authors of selected papers were invited to submit an improved, extended version to this special issue of Fundamenta Informaticae. Those papers went through a careful review by qualified international referees. The three papers in the special issue witness the multifaceted nature of CILC, covering important topics in temporal databases, description logics, and formal verification:

- Pietro Sala, Carlo Combi and Romeo Rizzi. *Checking Sets of Pure Evolving Association Rules*. The paper introduces an intuitive form of temporal association rules, called pure evolving association rules, capturing relations between values that are "most frequent" in temporal databases. The authors study the problem of checking a set of such rules over an instance of a temporal relation under a given approximation and characterize its complexity.

- Domenico Cantone, Marianna Nicolosi Asmundo and Daniele Francesco Santamaria. *An improved set-based reasoner for the description logic $\mathcal{DL}_{\mathbf{D}}^{4,\times}$*. This paper builds on previous work to propose an implementation of a reasoner for a decidable fragment of a stratified set theory expressing the description logic $\mathcal{DL}\langle 4\mathsf{LQS}^{\mathsf{R},\times}\rangle(\mathbf{D})$. In particular, the reasoner is able to solve the consistency and the classification problems for these knowledge bases, and a credulous and skeptical formalizations of the Higher-Order Conjuctive Query Answering problem. The efficiency is demonstrated on known benchmarks.

- Sylvain Conchon, Giorgio Delzanno and Angelo Ferrando. *Declarative Parameterized Verification of Distributed Protocols via the Cubicle Model Checker*. This work addresses the problem of automated verification of protocols in parameterized distributed systems. For these systems, safety properties can be formulated by lifting decision problems based on reachability and coverability. This work demonstrates how Cubicle, an SMT-based infinite-state model checker, can be applied as a verification engine for GLog, a logic-based language based on relational update rules that has been applied to specify topology-sensitive distributed protocols with asynchronous communication.

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