

PREFACE

Mathematical logic is a fundamental area both of mathematics and computer science, being at the frontier between them, which encompasses complex mathematical reasoning about its objects of study and provides rigorous tools for concrete realization.

This edition of *Zbornik radova* brings together researchers from different topics of mathematical logic with focus on applications to computer science. It is complementary to the issue *Zbornik radova* 12(20), 2009, edited by Zoran Ognjanović and presents novel research in the area. The articles are meant to a wide mathematical audience from doctoral students and early stage researchers to specialist in the fields. Each of the articles gives an introductory overview of the topics, develops the obtained results, points to open problems and further work and gives a comprehensive bibliography of the related work.

This collection comprises six articles that range through different topics of category proof theory, first-order probabilistic logics, clones and hyper-clones, computational interpretations of logics, switching theory and logical design, and interactive theorem proving.

- Zoran Petrić: *270 Minutes on Categorical Proof Theory*. The aim of this paper is to provide an introduction of basic categorical notions to a reader interested in logic and proof theory.
- Nebojša Ikodinović, Zoran Ognjanović, Miodrag Rasković, Zoran Marković: *First-order Probabilistic Logics and their Applications*. This paper gives an overview of the authors' results on formalization of uncertain reasoning in the first-order framework.
- Silvia Ghilezan, Jelena Ivetić, Pierre Lescanne, Silvia Likavec: *Structural Rules and Resource Control in Logic and Computation*. This paper is an overview of novel research in the domain of resource control both in logic and computation and gives an account of the authors' contributions to this field.
- Jelena Čolić-Oravec, Jovanka Pantović, Hajime Machida, Gradimir Vojvodić: *From Clones to Hyper-Clones*. This paper is a survey of different approaches to the study of the lattice of clones of hyperoperations, summarising contributions of the authors in the field.
- Radomir S. Stanković, Jaakko Astola, Claudio Moraga: *Pascal Matrices, Reed-Muller Expressions and Reed-Muller Error Correcting Codes*. This paper discusses relationships between three important mathematical concepts that have important applications in digital logic, signal processing, and information theory.
- Filip Marić: *A Survey of Interactive Theorem Proving*. The paper discusses the history of interactive theorem provers, their logical foundations, main features of state-of-the-art systems, and gives some details about the most prominent results and recent developments in the field.

The authors from Serbia are involved in three national projects of the Ministry of Education, Science and Technological Development of Serbia in the period 2011–2015 and the articles present overviews of results obtained within these projects: “Representations of logical structures and formal languages and their

application in computing, 174026, (Reprezentacije logičkih struktura i formalnih jezika i njihove primene u računarstvu)”, “Development of new information and communication technologies, based on advanced mathematical methods, with applications in medicine, telecommunications, power systems, protection of national heritage and education (Razvoj novih informaciono-komunikacionih tehnologija, korišćenjem naprednih matematičkih metoda, sa primenama u medicini, telekomunikacijama, energetici, zaštiti nacionalne baštine i obrazovanju)”, 44006 and “Automated Reasoning and Data Mining (Automatsko rezonovanje i istraživanje podataka)”, 174021.

The articles are internationally co-authored with leading researchers from Finland, France, Spain and Japan, which provides a wide international framework and increases the prominence of the presented work.

As a guest editor, I am grateful to the authors of the articles who contributed with their ideas, research and work devoted to this special issue.

Special thanks go to the members of the editorial board and the referees. The reviewers donated their time to this special issue, reviewing the submissions and suggesting improvements. I would like to thank Dragan Blagojević, the production editor and Dragan Aćimović for the great and demanding job they have done along the preparation of this issue.

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