Concurrency, Specification and Programming (CS&P)

Preface

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This is the seventeenth special issue of Fundamenta Informaticae based on the CONCURRENCY SPECIFICATION AND PROGRAMMING (CS&P) workshop, in succession to the sixteenth special issue published in 2014.

The CS&P workshops, being held every even year in Germany and every odd year in Poland, take place on the basis of an exchange programme between University of Warsaw and Humboldt University in Berlin. Initiated by computer science and mathematical logic interest groups affiliated to Warsaw and Humboldt Universities in the mid-seventies of the XX century, the workshops were suspended for some years in the eighties and resumed in 1992 in the extended form of participation: they evolved from bilateral meetings to the meetings hosting researchers also from a number of countries other than Germany and Poland. The scope of subjects has been broadened too: from linguistic and logical issues initially to diverse research areas such as, for instance, the aforesaid ones.

This part contains selected and extended versions of 11 out of 32 articles presented at the meeting that took place in Chemnitz from September 29 to October 1, 2014. As it was the case of all the previous special issues of Fundamenta Informaticae based on CS&P, the articles were selected on the basis of a review process admitted by international scientific periodicals. A complete collection of the contributions has been edited by Louchka Popova-Zeugmann and Holger Schlingloff of Humboldt University and Matthias Werner of Technical University, Chemnitz and published before the workshop as Proceedings. This is, thus, a continuation of the tradition of the former CS&Ps, whose participants had been supplied with proceedings in the form of technical reports during the meetings. The articles contained in this special issue, cover the following topics: Mathematical models of concurrency, Specification languages, Theory of programming, Parallel algorithms, Model checking and testing, Multi-agent systems, Rough sets, Object-oriented approaches, Knowledge management, Knowledge discovery and data mining, Soft computing, Information technology and management, as well as Applications.

In order to provide the readers with a better insight into this special issue, we enclose below brief overviews of the accepted papers.

The first two articles 'A Classifier Based on a Decision Tree with Verifying Cuts' and 'Classifiers for Behavioral Patterns Identification Induced from Huge Temporal Data', written by members of the Jan G. Bazan's group, are devoted to constructing hierarchical classifiers. The first one considers building decision trees based on additional cuts, while the second one deals with temporal data. The article

'Programming Self-Assembly of DNA Tiles', by Marco Bellia and M. Eugenia Occhiuto, shows how to build an interpreter for full Combinatorial Logic using DNA tiling. As the main result the authors get a DNA molecular machine that facilitates sequential programming in this model. In the article 'A Function Elimination Method for Checking Satisfiability of Arithmetical Logics' Valentina Castiglioni and her co-workers discuss Arithmetical Logic. The authors propose a method to reduce the arity of functions used. Then, they show how to use this method to assess facts on decidability of satisfiability for interesting classes of problems. The article 'Differential Privacy and Security', written by Damas P. Gruska, considers the problem of differential privacy in terms of process algebras. Michael Köhler-Bußmeier and Frank Heitmann deal with the reachability problem of HORNETS in the article 'An Upper Bound for the Reachability Problem of Safe, Elementary Hornets'. The authors examine and show some results on the lower- and upper-bound of the space complexity of the problem. The article 'Controlling Petri Net Behavior using Priorities for Transitions' by Irina A. Lomazova and Louchka Popova-Zeugmann, reports on the research on Petri nets with transition priorities. The authors show how to transform live unbounded Petri nets to live and bounded nest by adding some priority constraints. Linh Anh Nguyen combines Propositional Dynamic Logic with Converse and regular grammar logic in the article 'A Tractable Rule Language in the Modal and Description Logic that Combines CPDL with Regular Grammar Logic'. Then, he shows a number of interesting applications of the resulting expressive modal logic. The article 'Cut Points in PEG', by Roman R. Redziejowski, elaborates on recursive-descent parser with backtracking. The author shows how to introduce "cut points" that allow limiting backtracking and thus to improve the performance of parsing. In the article 'Inverted Fuzzy Implications in Approximate Reasoning' Zbigniew Suraj and his co-authors discuss fuzzy implications as basic logical operations in fuzzy logic. They propose a new method for choosing implications with optimal truth value of the implication consequent. The article by Bożena Woźna-Szcześniak 'SAT-based Bounded Model Checking for Weighted Deontic Interpreted Systems' investigates weighted branching time temporal logic used to specify the knowledge in multi-agent systems. The author shows a SAT-based model checking method for this logic system.

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