

Preface

This volume contains the Proceedings of 22nd Concurrency, Specification and Programming (CS&P) Workshop held on September 25-27, 2013 in Warsaw.

There were 48 submissions. Each submission was reviewed by two program committee members. The committee decided to accept 40 papers.

The Workshop was initiated in the mid 1970s by computer scientists and mathematicians from Warsaw and Humboldt Universities, as Polish-German annual meetings. They were suspended for some years in the 1980s and reactivated in 1992. Thereafter, the Workshop, organized alternately by the Institutes of Informatics and Mathematics of the University of Warsaw and the Institute of Informatics of Humboldt University in Berlin on the basis of an exchange program, has been given the name CS&P.

It should be mentioned that the CS&P meetings, initially purely bilateral, since 1992 have developed into events attended by participants from a number of different countries beside Poland and Germany. The present CS&P'2013 meeting attracted contributors from: Canada, Egypt, France, Germany, Italy, Nepal, The Netherlands, Poland, Russia, Serbia, Slovakia, Sweden, Turkey, United Kingdom, United States, and Vietnam.

The organisation of this year's CS&P would not be possible without the resources and financing provided by several institutions. We would like to thank the Faculty of Mathematics, Informatics and Mechanics of the University of Warsaw and the Institute of Informatics of the Humboldt University of Berlin for the continuing financial and organisational support provided to CS&P over last twenty-two years. The essential financial backing received from the Warsaw Center of Mathematics and Computer Science made the organisation of CS&P 2013 possible. Our thanks go to the Białystok University of Technology for providing the means for publishing this proceedings volume. Last, but not the least, we are grateful for the significant financial support provided by the Vistula University in Warsaw.

September 2013
Warsaw, Poland

Marcin Szczuka
Ludwik Czaja
Magdalena Kacprzak

Program Committee

Hans-Dieter Burkhard	Humboldt Universität zu Berlin
Ludwik Czaja	The University of Warsaw and Vistula University
Anna Gomolińska	University of Białystok
Monika Heiner	Brandenburg University at Cottbus
Magdalena Kacprzak	Białystok University of Technology
Anh Linh Nguyen	The University of Warsaw
Hung Son Nguyen	The University of Warsaw
Wojciech Penczek	Institute of Computer Science, Polish Academy of Sciences
Lech Polkowski	Polish-Japanese Institute of Information Technology
Louchka Popova-Zeugmann	Humboldt Universität zu Berlin
Holger Schlingloff	Fraunhofer FIRST and Humboldt Universität zu Berlin
Serhat Seker	Istanbul Technical University and Vistula University
Andrzej Skowron	The University of Warsaw
Zbigniew Suraj	University of Rzeszów
Marcin Szczuka	The University of Warsaw
Matthias Werner	TU Chemnitz
Karsten Wolf	University of Rostock

Additional Reviewers

The members of the Program Committee want to thank the following persons for contributing to the review process of CS&P 2013.

Marek Bednarczyk	Anna Sawicka
Piotr Chrząstowski-Wachtel	Martin Schwarick
Mario Haustein	Jarosław Skaruz
Andrzej Jankowski	Maciej Szreter
Michał Knapik	Dominik Ślęzak
Irina Lomazova	Wojciech Świeboda
Artur Męski	Józef Winkowski
Christian Rohr	Bożena Woźna-Szcześniak
Andrzej Salwicki	Olena Yaskorska
Matteo Sammartino	

Table of Contents

DNA Tiles, Wang Tiles and Combinators	1
<i>Marco Bellia and Maria Eugenia Occhiuto</i>	
Engineering MAS – A Device Integration Framework for Smart Home Environments	15
<i>Jack Betts and Berndt Müller</i>	
Experiments with Simulated Humanoid Robots	27
<i>Hans-Dieter Burkhard and Monika Domańska</i>	
Searching for Concepts in Natural Language Part of Fire Service Reports	39
<i>Kamil Bgk, Adam Krasuski and Marcin Szczuka</i>	
A Rule Format for Rooted Branching Bisimulation	49
<i>Valentina Castiglioni, Ruggero Lanotte and Simone Tini</i>	
A Rewriting Based Monitoring Algorithm for TPTL	61
<i>Ming Chai and Holger Schlingloff</i>	
Sound Recoveries of Structural Workflows with Synchronization	73
<i>Piotr Chrzgastowski-Wachtel, Paweł Gołqb and Bartosz Lewiński</i>	
Floating Channels Between Communicating Nets	88
<i>Ludwik Czaja</i>	
The Mathematical Model for Interference Simulation and Optimization in 802.11n Networks	99
<i>Iwona Dolińska, Antoni Masiukiewicz and Grzegorz Rządowski</i>	
A Domain View of Timed Behaviors	111
<i>Roman Dubtsov, Elena Oshevskaia and Irina Virbitskaite</i>	
A Multi-agent Approach to Unstructured Data Analysis Based on Domain-specific Ontology	122
<i>Natalia Garanina, Elena Sidorova and Evgeny Bodin</i>	
An Explicit Formula for Sorting and its Application to Sorting in Lattices	133
<i>Jens Gerlach</i>	
Rough Inclusion Functions and Similarity Indices	145
<i>Anna Gomolińska and Marcin Wolski</i>	
Efficient Rough Set Theory Merging	157
<i>Adam Grabowski</i>	
Opacity Testing	169
<i>Damas Gruska</i>	

Structural and Dynamic Restrictions of Elementary Object Systems	181
<i>Frank Heitmann and Michael Köhler-Bußmeier</i>	
Causal Structures for General Concurrent Behaviours	193
<i>Ryszard Janicki, Jetty Kleijn, Maciej Koutny and Lukasz Mikulski</i>	
Interactive Complex Granules	206
<i>Andrzej Jankowski, Andrzej Skowron and Roman Swiniarski</i>	
Identification of Formal Fallacies in a Natural Dialogue	219
<i>Magdalena Kacprzak and Anna Sawicka</i>	
Discovery of Cancellation Regions within Process Mining Techniques	232
<i>Anna Kalenkova and Irina A. Lomazova</i>	
Genetic Algorithm with Path Relinking for the Orienteering Problem with Time Windows	245
<i>Joanna Karbowska-Chilinska and Paweł Zabielski</i>	
Parameter Synthesis for Timed Kripke Structures	259
<i>Michał Knapik and Wojciech Penczek</i>	
Voronoi Based Strategic Positioning for Robot Soccer	271
<i>Heinrich Mellmann, Steffen Kaden, Marcus Scheunemann and Hans-Dieter Burkhard</i>	
Adaptive Grasping for a Small Humanoid Robot Utilizing Force- and Electric Current Sensors	283
<i>Heinrich Mellmann, Marcus Scheunemann and Oliver Stadie</i>	
Towards a Jason Infrastructure for Soccer Playing Agents	294
<i>Dejan Mitrović, Mirjana Ivanović and Hans-Dieter Burkhard</i>	
An ExpTime Tableau Method for Dealing with Nominals and Quantified Number Restrictions in Deciding the Description Logic SHOQ	296
<i>Linh Anh Nguyen and Joanna Golińska-Pilarek</i>	
SMT vs Genetic Algorithms: Concrete Planning in PlanICS Framework	309
<i>Artur Niewiadomski, Wojciech Penczek and Jarosław Skaruz</i>	
Granular Mereotopology: A First Sketch	322
<i>Lech Polkowski and Maria Semeniuk-Polkowska</i>	
SMT-Based Reachability Checking for Bounded Time Petri Nets	332
<i>Agata Póbroła, Piotr Cybula and Artur Męski</i>	
A Bi-objective Optimization Framework for Heterogeneous CPU/GPU Query Plans	342
<i>Piotr Przymus, Krzysztof Stencel and Krzysztof Kaczmarek</i>	

Analysis of Multilayer Neural Networks with Direct and Cross-Forward Connection	355
<i>Stanisław Płaczek and Bijaya Adhikari</i>	
Fractional Genetic Programming for a More Gradual Evolution	371
<i>Artur Rataj</i>	
From EBNF to PEG	383
<i>Roman Redziejowski</i>	
Towards an Object-Oriented Programming Language for Physarum Polycephalum Computing	389
<i>Andrew Schumann and Krzysztof Pancierz</i>	
About New Version of RSDS System	398
<i>Zbigniew Suraj and Piotr Grochowalski</i>	
Generation of Labelled Transition Systems for Alvis Models using Haskell Model Representation	409
<i>Marcin Szpyrka, Piotr Matyasik and Michał Wypych</i>	
Bisimulation-Based Concept Learning in Description Logics	421
<i>Thanh-Luong Tran, Quang-Thuy Ha, Thi-Lan-Giao Hoang, Linh Anh Nguyen and Hung Son Nguyen</i>	
Preprocessing for Network Reconstruction: Feasibility Test and Handling Infeasibility	434
<i>Annegret K. Wagler and Jan-Thierry Wegener</i>	
A Holistic State Equation for Timed Petri Nets	448
<i>Matthias Werner, Louchka Popova-Zeugmann, Mario Haustein and Elisabeth Pelz</i>	
Query Rewriting Based on Meta-Granular Aggregation	457
<i>Piotr Wiśniewski and Krzysztof Stencel</i>	
Checking MTL Properties of Discrete Timed Automata via Bounded Model Checking	469
<i>Bożena Woźna-Szcześniak and Andrzej Zbrzezny</i>	
On Boolean Encodings of Transition Relation for Parallel Compositions of Transition Systems	478
<i>Andrzej Zbrzezny</i>	