

# ISMVL 2014

Sunday, May 18th, 2014

18:00 Reception

Monday, May 19th, 2014

8:00-9:00 Registration

8:45-9:00 Opening

9:00-10:00 Invited Talk I (Carsten Lutz): Ontology-Based Data Access: Complexity and Expressive Power | Chair: Rolf Drechsler

10:00-10:30 Coffee Break

10:30-12:30 Session 1a: Logic Design and Switching Functions  
Chair: Gerhard Dueck

An Update Method for a CAM Emulator using an LUT Cascade Based on an EVMDD (k)  
Hiroki Nakahara, Tsutomu Sasao and Munehiro Matsuura

A Lower Bound on the Number of Variables to Represent Incompletely Specified Index Generation Functions  
Tsutomu Sasao, Yuta Urano and Yukihiro Iguchi

On the Number of S-Threshold Functions on not Necessarily Binary Input  
Jovanka Pantovic, Silvia Ghilezan and Jovisa Zunic

The Maiorana Method to generate multiple-valued bent functions, revisited  
Claudio Moraga, Milena Stankovic, Radomir Stankovic and Suzana Stojkovic

12:30-14:00 Lunch

14:00-15:30 Session 2a: Algebra and Logic I  
Chair: Takahiro Hanyu

Concrete dualities and essential arities  
Sebastian Kerkhoff

Maximal and minimal closed classes in multiple-valued logic  
Tamás Waldhauser

On relations preserved by a weak near-unanimity function  
Dmitriy Zhuk

15:30-16:00 Coffee Break

16:00-17:30 Session 3a: Investigations on Types of Clones  
Chair: Dmitry Zhuk

Polynomially Closed Co-Clones  
Victor Lagerkvist and Magnus Wahlström

Partial R-clones  
Boris Romov and Karsten Schölzel

Essentially Minimal Clones of Rank 3 on a Three-Element Set  
Hajime Machida and Ivo G. Rosenberg

Session 1b: Problem Solvers and Fuzzy Logic  
Chair: Alexis De Vos

Multiple-Valued Problem Solvers – Comparison of Several Approaches  
Bernard Steinbach and Christian Posthoff

Many-Valued MinSAT Solving  
Josep Argelich, Chu-Min Li, Felipe Many and Zhu Zhu

Semantic Games with Backtracking for Fuzzy Logics  
Christian Fermüller

Neural Spike Compression Using Feature Extraction and Fuzzy C-Means Codebook  
Russell Dodd, Bruce Cockburn and Vincent Gaudet

Session 2b: Hardware Improvement and Exploitation  
Chair: Martin Lukac

Design of a Quaternary Single-Ended Current-Mode Circuit for an Energy-Efficient Inter-Chip Asynchronous Communication Link  
Akira Mochizuki, Hirokatsu Shirahama and Takahiro Hanyu

Non-binary Successive Approximation in Analog-to-Digital Converters: A Survey  
Takao Waho

Constant Geometry Algorithms for Galois Field Expressions and Their Implementation on GPUs  
Radomir Stankovic, Jaakko Astola, Claudio Moraga and Dušan Gajic

Session 3b: Synthesis and Fault Analysis for Reversible Circuits  
Chair: D. Michael Miller

Efficient Reversible Logic Synthesis via Isomorphic Subgraph Matching  
Mridul Krishna and Anupam Chattopadhyay

A Cube Pairing Approach for Synthesis of ESOP based Reversible Circuit  
Chandan Bandyopadhyay, Hafizur Rahaman and Rolf Drechsler

Analysis of Faults in Reversible Computing  
Martin Lukac, Michitaka Kameyama, Marek Perkowski, Pawel Kerntopf and Claudio Moraga

10:30-12:00 Session 4a: Algebra and Logic II

Chair: Robert Wille

Lukasiewicz Negation and Neighbors of Intuitionistic Logic  
Thomas Ferguson

Five new construction methods on residuated monoids  
Sándor Jenei

First-order Logic Based on Set Approximation: a Partial Three-valued Approach  
Tamás Mihálydeák

Session 4b: Coding

Chair: Hiroki Nakahara

Evaluation of high-speed interfaces for VLSI systems using Tomlinson-Harashima Precoding  
Yosuke Iijima and Yasushi Yuminaka

An Efficient Approach to Verifying Galois-Field Arithmetic Circuits of Higher Degrees and Its Application to ECC Decoders  
Rei Ueno, Kotaro Okamoto, Naofumi Homma and Takafumi Aoki

Comparison of Spectrally Efficient Coding Techniques for High-Speed Serial Links  
Yasushi Yuminaka, Yuuki Takada, Tomonao Okada and Yosuke Iijima

from 12:00 Excursion & Banquet

Wednesday, May 21st, 2014

9:00-10:00 Invited Talk III (Görschwin Fey): Command and Data Handling Infrastructure for Space Systems | Chair: Mathias Soeken

10:00-10:30 Poster Session & Coffee Break

10:30-12:00 Session 5a: Investigations on Properties of Clones  
Chair: Elena Dubrova

Countable intervals of partial clones  
Lucien Haddad and Karsten Schölzel

Relation graphs and partial clones on a 2-element set  
Miguel Couceiro, Lucien Haddad, Karsten Schölzel and Tamás Waldhauser

Minimal Cut Vectors and Logical Differential Calculus  
Miroslav Kvassay, Elena Zaitseva, Vitaly Levashenko and Jozef Kostolny

Session 5b: Advances for Quantum Computation

Chair: Mitch Thornton

The decomposition of  $U(n)$  into  $XU(n)$  and  $ZU(n)$   
Alexis De Vos and Stijn De Baerdemacker

Synthesis of Ternary Grover's Algorithm  
Sudhindu Bikash Mandal, Amlan Chakrabarti and Susmita Sur-Kolay

Review of some basic aspects of ternary Reversible and Quantum Computing  
Claudio Moraga

12:00-13:30 Lunch

13:30-15:00 Session 6a: Decision Diagrams and other Function Representations  
Chair: Radomir Stankovic

Analysis Methods of Multi-State Systems Partially Having Dependent Components Using Multiple-Valued Decision Diagrams  
Shinobu Nagayama, Tsutomu Sasao, Jon Butler, Mitch Thornton and Theodore Manikas

System Probability Distribution Modeling using MDDs  
Mitch Thornton, Theodore Manikas, Stephen Szygenda and Shinobu Nagayama

On Submodular and Supermodular Functions on Lattices and Related Structures  
Dan Simovici

Session 6b: Design and Evaluation of Memories

Chair: Naofumi Homma

Associative Memories Based on Multiple-Valued Sparse Clustered Networks  
Hooman Jarollahi, Naoya Onizawa, Takahiro Hanyu and Warren J. Gross

Design of a Logic-in-Memory Multiple-Valued Reconfigurable VLSI Based on a Bit-Serial Packet Data Transfer Scheme  
Shintaro Harada, Xu Bai, Michitaka Kameyama and Yoshichika Fujioka

Soft-Delay-Error Evaluation in Content-Addressable Memory  
Naoya Onizawa, Shoun Matsunaga, Noboru Sakimura, Rryusuke Nebashi, Tadahiko Sugibayashi and Takahiro Hanyu

15:00-15:30 Poster Session & Coffee Break

15:30-17:00 Session 7a: Algebra and Logic III  
Chair: Mathias Soeken

Online Monitoring of Distributed Systems with a Five-valued LTL  
Ming Chai and Holger Schlingloff

Ternary Parametron Based on Subharmonic Oscillation of Order Three by Forcing  
Takako Soma and Takashi Soma

Inadmissible Class of Boolean Functions under Stuck-at Faults  
Debesh Kumar Das, Debabani Chowdhury, Bhargab B Bhattacharya and Tsutomu Sasao

Session 7b: Hardware Components

Chair: Vincent Gaudet

Variation-Effect Analysis of MTJ-Based Multiple-Valued Programmable Resistors  
Masanori Natsui and Takahiro Hanyu

Differential-time and pulse-amplitude modulation signaling for serial link transceivers  
Mostafa Rashdan and James Haslett

An Algorithm for Constructing a Smallest Register with Non-Linear Update Generating a Given Sequence  
Nan Li and Elena Dubrova

Tuesday, May 20th, 2014

9:00-10:00 Invited Talk II (Daniel Große): Circuit Design: Slip Schedule or Automate Debug | Chair: Robert Wille

10:00-10:30 Coffee Break

17:00

18:00

Plenary Session & Closing

Guided Tour Bremen's historical city centre