

The 17th Intl. Symposium on Stabilization, Safety, and Security (SSS 2015) Edmonton, Alberta, Canada

Tuesday, August 18th: Summer School Tutorial Program

Location: ECHA 1-182 (Edmonton Clinic Health Academy, 11405 87th Ave.)

9:00-10:00 On-Site Registration and Coffee

10:00-12:00 Tutorial 1: **Communication-less Secure-multiparty-computation**
Instructor: Shlomi Dolev, Ben-Gurion University, Israel

The lecture will introduce the basic concept of secure-multiparty-computation, then demonstrate ways to implement a Turing machine, an (accumulating) automaton, database implementation, and random access machine, enabling provable information theoretical secure, private and secure computations in the clouds.

12:00-13:00 Lunch Break

13:00-15:00 Tutorial 2: **An Introduction to Distributed Computability via Combinatorial Topology**
Instructor: Sergio Rajsbaum, UNAM, Mexico

The lecture will give a self-contained introduction to the analysis of distributed algorithms using combinatorial topology techniques, covering the first few chapters of the book: Herlihy, Kozlov, Rajsbaum, *Distributed Computing Through Combinatorial Topology* (Elsevier-Morgan Kaufmann, 2013). Techniques to analyze when a given task can be solved in a given distributed computing model will be described. The effects of the parameters of the model, such as asynchrony, failures and different communication mechanisms will be explored.

15:00-15:30 Coffee Break

15:30-17:30 Tutorial 3: **Distributed Computing by Mobile Entities**
Instructor: Nicola Santoro, Carleton University, Canada

The lecture will be an introduction to the study of complexity and computability in systems where the computational entities can move within the spatial universe they inhabit. The field has applications in areas as diverse as autonomous robots moving in a terrain, software agents moving in a network, autonomous intelligent vehicles, wireless mobile ad-hoc networks, and networks of mobile sensors.

18:00-22:00 Conference Reception at the University of Alberta Alumni House (11515 Saskatchewan Dr.)

Wednesday, August 19th: Symposium Technical Program

Location: Wild Rose Room (Lister Centre, 11613 87th Ave.)

8:00-9:00 On-Site Registration

9:00-10:15 Keynote 1: **Distributed Runtime Verification**
Speaker: Sergio Rajsbaum, UNAM, Mexico

10:15-10:30 Coffee Break

10:30-12:00 Session 1: **Ad-hoc and Sensor Networks, Mobile Agents I**
Session Chair: Paola Flocchini, University of Ottawa, Canada

Reaching Approximate Byzantine Consensus with Multi-hop Communication, Lili Su and Nitin Vaidya. **(Best Student Paper Award)**

The Complexity of Data Aggregation in Static and Dynamic Wireless Sensor Networks, Quentin Bramas and Sebastien Tixeuil

Brief Announcement: *Vehicle to Vehicle Authentication*, Shlomi Dolev, Lukasz Krzywiecki, Nisha Panwar and Michael Segal

12:00-13:00 Lunch Break

13:00-14:45 Session 2: **Self-stabilization I**
Session Chair: Janna Burman, Université Paris-Sud, France

Constructing Self-Stabilizing Oscillators in Population Protocols, Colin Cooper, Anissa Lamani, Giovanni Viglietta, Masafumi Yamashita and Yukiko Yamauchi. **(Best Paper Award)**

Towards a Universal Approach for the Finite Departure Problem in Overlay Networks, Thim Strothmann, Andreas Koutsopoulos and Christian Scheideler

Avatar: A Time- and Space-Efficient Self-Stabilizing Overlay Network, Andrew Berns

Brief Announcement: *Data Stabilization Enforcement via Active Monitoring the Cloud Infrastructure Consistency Case*, Reuven Yagel, Shlomi Dolev, Alexander Binun, Leonid Yankulin, Marc Lacoste, Thierry Coupaye, Mohammed Kassi-Lahlou, Alex Palesandro and Aurélien Wailly

14:45-15:00 Coffee Break

15:00-16:00 Session 3: **Ad-hoc and Sensor Networks, Mobile Agents II**
Session Chair: Paola Flocchini, University of Ottawa, Canada

Enabling Minimal Dominating Set in Highly Dynamic Distributed Systems, Swan Dubois, Mohamed-Hamza Kaaouachi and Franck Petit

The Match-Maker: Constant-Space Distributed Majority via Random Walks, Leszek Gasieniec, David Hamilton, Russell Martin and Paul Spirakis

Thursday, August 20th: Symposium Technical Program

Location: Wild Rose Room (Lister Centre, 11613 87th Ave.)

- 8:00-9:00 On-Site Registration
- 9:00-10:15 Keynote 2: **Is Bitcoin Stable, Secure, and Scalable?**
Speaker: Roger Wattenhofer, ETH, Switzerland
- 10:15-10:30 Coffee Break
- 10:30-12:00 Session 4: **System Security in Distributed Computing**
Session Chair: Alex Russell, University of Connecticut, USA
- The k -Observer Problem on d -regular Graphs*, Benjamin Ries, Bernhard Schamberg and Walter Unger
- Functional Encryption for Cascade Automata*, Shlomi Dolev, Niv Gilboa and Dan Brownstein
- Brief Announcement: *Rational Non-repudiation Protocols*, Muqet Ali, Rezwana Reaz and Mohamed Gouda
- Brief Announcement: *Secure and Private Bidding Protocol for Incentive-based Demand-Response System of Smart Grid*, Mohammad Rahman, Anirban Basu and Shinsaku Kiyomoto
- 12:00-13:00 Lunch Break
- 13:00-14:45 Session 5: **Fault-tolerance and Dependability**
Session Chair: Nitin Vaidya, University of Illinois at Urbana-Champaign, USA
- Untangling Partial Agreement: Iterated x -Consensus Simulations*, Damien Imbs, Sergio Rajsbaum and Adrian Valle
- Efficient and Decentralized Polling Protocol for General Social Networks*, Bao-Thien Hoang and Abdessamad Imine
- Automated Analysis of Impact of Scheduling on Performance of Self-Stabilizing Protocols*, Saba Aflaki, Borzoo Bonakdarpour and Sebastien Tixeuil
- Brief Announcement: *Meta-MapReduce: A Technique for Reducing Communication in MapReduce Computations*, Foto Afrati, Shlomi Dolev, Shantanu Sharma and Jeffrey Ullman
- 17:30-20:00 Conference Dinner and Social Event at the University of Alberta Faculty Club, Saskatchewan Room (11435 Saskatchewan Dr.)

Friday, August 21st: Symposium Technical Program

Location: Wild Rose Room (Lister Centre, 11613 87th Ave.)

9:30-10:45 Keynote 3: **Correctness Conditions for Randomized Shared Memory Algorithms**,
Speaker: Philipp Woelfel, University of Calgary, Canada

10:45-11:00 Coffee Break

11:00-12:00 Session 6: **Formal Methods and Distributed Algorithms**
Session Chair: Andrzej Pelc, Université du Québec en Outaouais, Canada

The Implication Problem of Computing Policies, Rezwana Reaz, Muqheet Ali, Mohamed G. Gouda, Marijn J. H. Heule and Ehab S. Elmallah

Verifying Recurrence Properties in Self-Stabilization by Checking the Absence of Finite Counterexamples, Oday Jubran, Eike Moehlmann and Oliver Theel

12:00-13:00 Lunch Break

13:00-14:30 Session 7: **Self-stabilization II**
Session Chair: Ioanis Nikolaidis, University of Alberta, Canada

Refinement of Probabilistic Stabilizing Programs Using Genetic Algorithms, Ling Zhu, Jingshu Chen and Sandeep Kulkarni

Self-Stabilizing Virtual Synchrony, Shlomi Dolev, Chryssis Georgiou, Ioannis Marcoullis and Elad Schiller

Brief Announcement: *Self-adjusting Skip Graphs*, Sikder Huq and Sukumar Ghosh

Brief Announcement: *A Framework for Containing the Degree Growth in Topological Self-stabilization*, Thamer Alsulaiman, Andrew Berns and Sukumar Ghosh

Brief Announcement: *Stabilizing Breach-Free Sensor Barriers*, Jorge Cobb and Chin-Tser Huang

14:30-14:45 Concluding Remarks