SSS2018 Technical Program

Sunday, November 4 (Workshop Day)
2nd Workshop on Self-organization in Swarm of Robots (WSSR)

Session 1: Toward Autonomous Self-Organizing Systems for Mobile Robots (Chair: Yoshiaki Katayama)

9:30 – 11:00
- Introduction: JST SICORP project “Realization of Sustainable Autonomous Self-Organizing Systems by Low-Functional Robots in Environmental Disaster Recovery”
- Mobile Robots Communicating, Computing and Acting
  Shlomi Dolev
- Computational Power of Myopic Robots on Graphs
  Fukuhito Ooshita
- Rendezvous on asynchronous mobile robots with lights -Relationship between power of lights and synchrony-
  Koichi Wada

11:00 – 11:15 Break

Session 2: Optimization (Chair: Yukiko Yamauchi)

11:15 – 12:45
- Optimization in multi-agent patrolling on graphs
  Akitoshi Kawamura
- Explorations with energy-constrained mobile robots
  Shantanu Das
- Patrolling Problem and Relatives
  Leszek Gąsieniec

12:45 – 14:15 Lunch

Session 3: Mobile robots (Chair: Paola Flocchini)

14:15 – 15:35
- TuringMobile: A Turing Machine of Oblivious Mobile Robots with Limited Visibility
  Giovanni Viglietta
- Mitigating faults and attacks in mobile robotic systems
  Sébastien Tixeuil
Model Checking of Mobile Robot Algorithms

Doan Thi Thu Ha

15:35 – 16:00 Break

Session 4: Programmable Matter (Chair: Giovanni Viglietta)

16:00 – 17:30 Self-Organizing Particle Systems: an Algorithmic Approach to Programmable Matter

Joshua Daymude

Network Constructors and the Crystal Structure Prediction Problem

Michail Theofilatos

An Autonomous Distributed System Consisting of Pair-Robots: Model and Basic Algorithms

Yonghwan Kim

An Introduction to Leader Election in the Population Protocol Model

Yuichi Sudo

18:30 – 20:30 Welcome reception at Alice Aqua Garden Tamachi
Monday, November 5

9:10 – 9:15 Opening

Session 1: Keynote Talk 1 (Chair: Taisuke Izumi)

Jun Sakuma

10:15 – 10:30 Break

Session 2: Security and Byzantine Fault Tolerance (Chair: Shlomi Dolev)

10:30 – 10:57 Reliable Broadcast in Dynamic Networks with Locally Bounded Byzantine Failures
Silvia Bonomi, Giovanni Farina and Sébastien Tixeuil

10:57 – 11:24 Physical Zero-Knowledge Proof for Makaro
Xavier Bultel, Jannik Dreier, Jean-Guillaume Dumas, Pascal Lafourcade, Daiki Miyahara, Takaaki Mizuki, Atsuki Nagao, Tatsuya Sasaki, Kazumasa Shinagawa and Hideaki Sone

Thibaut Balabonski, Pierre Courtieu, Robin Pelle, Lionel Rieg, Sébastien Tixeuil and Xavier Urbain

11:36 – 13:00 Lunch

Session 3: Agreement and Storage (Chair: Swan Dubois)

13:00 – 13:27 k-Set Agreement and Renaming in the Presence of Contention-Related Crash Failure
Anaïs Durand, Michel Raynal and Gadi Taubenfeld

13:27 – 13:54 Clairvoyant State Machine Replication
Rida Bazzi and Maurice Herlihy

13:54 – 14:21 Load Balanced Distributed Directories
Shishir Rai, Gokarna Sharma, Costas Busch and Maurice Herlihy
Brief Announcement: Optimal Self-Stabilizing Mobile Byzantine-Tolerant Regular Register with bounded timestamps
Silvia Bonomi, Antonella Del Pozzo, Maria Potop-Butucaru and Sébastien Tixeuil

Session 4: Shared Memory (Chair: Rida Bazzi)

14:50 – 15:17 An Innovative Approach to Achieve Compositionality Efficiently using Multi-Version Object Based Transactional Systems (Best Student Paper)
Chirag Juyal, Sandeep Kulkarni, Sweta Kumari, Sathya Peri, and Archit Somani

15:17 – 15:44 An Adaptive Logging Framework for Persistent Memories
Pavan Poudel and Gokarna Sharma

15:44 – 16:11 Concurrent Lock-free Unbounded Priority Queue with Mutable Priorities
Ivan Walulya, Bapi Chatterjee, Ajoy K. Datta, Rashmi Niyoliya and Philippas Tsigas

16:11 – 16:30 Break

Session 5: Self-Stabilization (Chair: Sébastien Tixeuil)

16:30 – 16:57 Self-Stabilization and Byzantine Tolerance for Maximal Matching
Stephan Kunne, Johanne Cohen and Laurence Pilard

Karine Altisen, Stéphane Devismes and Anaïs Durand

17:24 – 17:36 Brief Announcement: Time Efficient Self-Stabilizing Stable Marriage
Joffroy Beauquier, Thibault Bernard, Janna Burman, Shay Kutten and Marie Laveau

17:50 – 18:50 Business Meeting
Tuesday, November 6

Session 6: Programmable Matter (Chair: Shuji Kijima)

9:15 – 9:42  Bee’s Strategy Against Byzantines, Replacing Byzantine Participants
Amitay Shaer, Shlomi Dolev, Silvia Bonomi, Michel Raynal and Roberto Baldoni

9:42 – 10:09  Simple and Fast Approximate Counting and Leader Election in Populations
Othon Michail, Paul Spirakis and Michail Theofylatos

10:09 – 10:21  Brief Announcement: Deterministic Leader Election in Self-Organizing Particle Systems
Rida Bazzi and Joseph Briones

10:21 – 10:40  Break

Session 7: Overlay Network I (Chair: Volker Turau)

10:40 – 11:07  On Underlay-Aware Self-Stabilizing Overlay Networks
Thorsten Götte, Christian Scheideler and Alexander Setzer

11:07 – 11:34  Relays: A New Approach for the Finite Departure Problem in Overlay Networks
Christian Scheideler and Alexander Setzer

11:34 – 13:00  Lunch

Session 8: Keynote 2 (Chair: Toshimitsu Masuzawa)

13:00 – 14:00  Quantum Distributed Computing
François Le Gall

14:00 – 14:15  Break

Session 9: Robots and Agents I (Chair: Shantanu Das)

14:15 – 14:42  Exploration of Finite 2D Square Grid by a Metamorphic Robotic System (Best Paper)
Keisuke Doi, Yukiko Yamauchi, Shuji Kijima and Masafumi Yamashita
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<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>14:42 – 15:09</td>
<td><strong>On Fast Pattern Formation by Autonomous Robots</strong></td>
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<td><em>Ramachandran Vaidyanathan, Gokarna Sharma and Jerry Trahan</em></td>
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<td>15:09 – 15:36</td>
<td><strong>Ring Exploration with Myopic Luminous Robots</strong></td>
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<td><em>Fukuhito Ooshita and Sébastien Tixeuil</em></td>
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<td>15:36 – 16:03</td>
<td><strong>Arbitrary Pattern Formation with Four Robots</strong></td>
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<td><em>Quentin Bramas and Sébastien Tixeuil</em></td>
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<td>18:45 – 21:00</td>
<td><strong>Banquet at Asakusa View Hotel</strong></td>
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Wednesday, November 7

Session 10: Keynote 3 (Chair: Taisuke Izumi)

9:15 – 10:15  Local checkability: a self stabilization notion that impacts foundations of distributed computing
              Shay Kutten

10:15 – 10:30  Break

Session 11: Overlay Network II (Chair: Stéphane Devismes)

10:30 – 10:57  A Self-Stabilizing Hashed Patricia Trie
                Till Knollmann and Christian Scheideler

10:57 – 11:24  Self-stabilizing Overlays for high-dimensional Monotonic Searchability
                Michael Feldmann, Christina Kolb and Christian Scheideler

11:24 – 11:51  A $O(\log n)$ Distributed Algorithm to Construct Routing Structures for Pub/Sub Systems
                Volker Turau

11:51 – 13:20  Lunch

Session 12: Robots and Agents II (Chair: Yuichi Sudo)

                Caterina Feletti, Carlo Mereghetti and Beatrice Palano

13:47 – 14:14  Searching with Increasing Speeds
                Leszek Gąsieniec, Shuji Kijima and Jie Min

14:14 – 14:41  Gracefully Degrading Gathering in Dynamic Rings
                Marjorie Bournat, Swan Dubois and Franck Petit

14:41 – 14:53  Brief Announcement: Feasibility of Weak Gathering in Connected-over-time Dynamic Rings
                Fukuhito Ooshita and Ajoy K. Datta

14:53 – 14:58  Closing