

SPAA 2018 Preliminary Schedule

Sunday, July 15

18:00-22:00 Welcome reception

Monday, July 16

8:55-9:05 Opening Remarks

9:05-11:00 **Session 1. Graphs.** Session chair: Kunal Agrawal

9:05-9:28 (Best Paper) Barbara Geissmann and Lukas Gianinazzi.
Minimum Cuts in Near-Linear work and Low Depth.

9:28-9:51 Shirel Attali, Merav Parter, David Peleg, and Shay Solomon.
Wireless Expanders.

9:51-10:14 Harald Räcke, Roy Schwartz, and Richard Stotz.
Trees for Vertex Cuts, Hypergraph Cuts and Minimum Hypergraph Bisection.

10:14-10:37 Haim Kaplan and Shay Solomon.
Dynamic Representations of Sparse Distributed Networks: A locality-sensitive approach.

10:37-11:00 Nicholas Harvey, Christopher Liaw, and Paul Liu.
Greedy and Local Ratio Algorithms in the MapReduce Model.

11:00-11:30 **BREAK**

11:30-12:30 **Keynote 1.** Session chair: Christian Scheideler
Charles E. Leiserson. *The Resurgence of Software Performance Engineering*

12:30-14:00 **LUNCH**

14:00-15:09 **Session 2a. Matrix and Matrix-Based Algorithms.** Session chair:
Oded Schwartz

14:00-14:23 Grey Ballard, James Demmel, Laura Grigori, Mathias Jacquelin, and Nicholas Knight.
A 3D Parallel Algorithm for QR Decomposition.

14:23-14:46 Ojas Parekh, Cynthia A. Phillips, Conrad D. James, and James B. Aimone.
Constant-Depth and Subcubic-Size Threshold Circuits for Matrix Multiplication.

- 14:46-15:09 Amir Gholami, Ariful Azad, Peter Jin, Kurt Keutzer, and Aydin Buluc.
Integrated Model, Batch and Domain Parallelism in Training Neural Networks.
- 15:09-15:36 Session 2b. Brief Announcements.** Session chair: Oded Schwartz
- 15:09-15:18 Marco Bressan, Enoch Peserico, and Luca Pretto.
Brief Announcement: On Approximating PageRank Locally with Sublinear Query Complexity.
- 15:18-15:27 Ink Chinavinijkul, Jacob Newcomb, Lingzhi Xi, and David P. Bunde.
Brief Announcement: Coloring-based task mapping for Dragonfly systems.
- 15:27-15:36 Alvaro Velasquez and Sumit Kumar Jha.
Brief Announcement: Parallel Transitive Closure Within 3D Crosspoint Memory.
- 15:36-16:05 BREAK**
- 16:05-17:37 Session 3. Concurrent Data Structures.** Session chair: Aydın Buluç
- 16:05-16:28 Gal Milman, Alex Kogan, Yossi Lev, Victor Luchangco, and Erez Petrank.
BQ: A Lock-Free Queue with Batching.
- 16:28-16:51 Panagiota Fatourou, Nikolaos D. Kallimanis, and Thomas Ropars.
An Efficient Wait-free Resizable Hash Table.
- 16:51-17:14 Kjell Winblad, Konstantinos Sagonas, and Bengt Jonsson.
Lock-free Contention Adapting Search Trees.
- 17:14-17:37 Dan Alistarh, Trevor Brown, Justin Kopinsky, Giorgi Nadiradze, and Jerry Li.
Distributionally Linearizable Data Structures.
- 18:00-19:00 Business Meeting**
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Tuesday, July 17

- 9:05-11:00 Session 4. Distributed Algorithms.** Session chair: Seth Gilbert
- 9:05-9:28 Saeed Akhoondian Amiri, Patrice Ossona de Mendez, Roman Rabinovich and Sebastian Siebertz.
Distributed Domination on Graph Classes of Bounded Expansion.

- 9:28-9:51 Orr Fischer, Tzlil Gonen, Fabian Kuhn and Rotem Oshman.
Possibilities and Impossibilities for Distributed Subgraph Detection.
- 9:51-10:14 Janne H. Korhonen and Jukka Suomela.
Towards a Complexity Theory for the Congested Clique.
- 10:14-10:37 Peter Robinson, Christian Scheideler and Alexander Setzer.
Breaking the $\Omega(vn)$ Barrier: Fast Consensus under a Late Adversary.
- 10:37-11:00 Simon Collet and Amos Korman.
Intense Competition can Drive Selfish Explorers to Optimize Coverage.
- 11:00-11:30 BREAK**
- 11:30-12:30 Keynote 2.** Session chair: Guy Blelloch.
David A. Bader. *Massive-Scale Streaming Analytics: Models, Parallelsim, and Real-World Applications*
- 12:30-14:00 LUNCH**
- 14:00-15:09 Session 5a. Caching.** Session chair: Vijaya Ramachandran.
- 14:00-14:23 Erik D. Demaine and Quanquan C. Liu.
Red-Blue Pebble Game: Complexity of Computing the Trade-Off between Cache Size and Memory Transfers.
- 14:23-14:46 Guy Even, Moti Medina and Dror Rawitz.
Online Generalized Caching with Varying Weights and Costs.
- 14:46-15:09 Andrea Lincoln, Quanquan C. Liu, Jayson Lynch and Helen Xu.
Cache Adaptive Exploration.
- 15:09-15:36 Session 5b. Brief Announcements.** Session chair: Vijaya Ramachandran.
- 15:09-15:18 Leonid Barenboim and Yaniv Tzur.
Brief Announcement: Distributed Symmetry-Breaking with Improved Vertex-Averaged Complexity.
- 15:18-15:27 Ellis Giles, Kshitij Doshi, and Peter Varman.
Brief Announcement: Hardware Transactional Persistent Memory.
- 15:27-15:36 Christina Kolb, Daniel Jung, Jannik Sundermeier, and Christian Scheideler.

*Brief Announcement: Competitive Routing in Hybrid
Communication Networks*

- 15:36-16:05** **BREAK**
- 16:05-17:37** **Session 6. Non-Volatile Memories.** Session chair: TB Schardl
- 16:05-16:28 Guy Blelloch, Yan Gu, Julian Shun and Yihan Sun.
Parallel Write-Efficient Geometry Algorithms.
- 16:28-16:51 Guy E. Blelloch, Phillip B. Gibbons, Yan Gu, Charles
McGuffey and Julian Shun.
The Parallel Persistent Memory Model.
- 16:51-17:14 Nachshon Cohen, Rachid Guerraoui and Igor
Zablotchi.
The Inherent Cost of Remembering Consistently.
- 17:14-17:37 Andreia Correia, Pascal Felber and Pedro Ramalhete.
*Romulus: Efficient Algorithms for Persistent
Transactional Memory*
- 17:45-19:30** **Guided tour** through Vienna inner city (optional)
- 19:30+** **Banquet** at the Rathaus
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Wednesday, July 18

- 9:00-10:32** **Session 7. Scheduling and Load Balancing.** Session Chair: Jeremy
Fineman.
- 9:00-9:23 Nikhil Devanur and Janardhan Kulkarni.
*A Unified Rounding Algorithm For Unrelated Machines
Scheduling Problem.*
- 9:23-9:46 Giorgio Lucarelli, Benjamin Moseley, Nguyen Kim
Thang, Abhinav Srivastav and Denis Trystram.
*Online Non-preemptive Scheduling on Unrelated
Machines with Rejections.*
- 9:46-10:09 Noga Alon, Yossi Azar and Mark Berlin.
The Price of Bounded Preemption.
- 10:09-10:32 Ori Rottenstreich, Yossi Kanizo, Haim Kaplan and
Jennifer Rexford.
Accurate Traffic Splitting on Commodity Switches.

- 10:32-11:00** **BREAK**
- 11:00-11:46** **Session 8a. Parallel Data Structures.** Session chair: Julian Shun
11:00-11:23 Wei Quan Lim, Seth Gilbert and Kunal Agrawal.
 Parallel Working-Set Search Structures.
11:23-11:46 Tsvi Kopelowitz, Ely Porat and Yair Rosenmutter.
 *Improved Worst-Case Deterministic Parallel Dynamic
 Minimum Spanning Forest.*
- 11:46-12:31** **Session 8b. Brief Announcements.** Session chair: Julian Shun
11:46-11:55 Kanthi Sarpatwar, Baruch Schieber, and Hadas
 Shachnai.
 *Brief Announcement: Approximation Algorithms for
 Preemptive Resource Allocation.*
11:55-12:04 Saurabh Kumar and Samir Khuller.
 *Brief Announcement: A Greedy 2 Approximation to the
 Active Time Problem.*
12:04-12:13 Tao B. Scharidl, I-Ting Angelina Lee, and Charles E.
 Leiserson.
 Brief Announcement: Open Cilk.
12:13-12:22 Manuel Pöter and Jesper Larsson Träff.
 *Brief Announcement: Stamp-it: A more Thread-
 efficient, Concurrent Memory Reclamation Scheme in
 the C++ Memory Model.*
12:22-12:31 Johannes Schaefer and Friedhelm Meyer auf der
 Heide.
 *Brief Announcement: Communication in Systems of
 Home Based Mobile Agents.*
- 12:31-14:00** **LUNCH**
- 14:00-15:09** **Session 9. Online Algorithms.** Session chair: Michael Bender
14:00-14:23 Susanne Albers and Jens Quedenfeld.
 Optimal Algorithms for Right-Sizing Data Centers.
14:23-14:46 Björn Feldkord and Friedhelm Meyer auf der Heide.
 Online Facility Location with Mobile Facilities.
14:46-15:09 Dan Alistarh, Syed Kamran Haider, Raphael Kübler
 and Giorgi Nadiradze.
 The Transactional Conflict Problem.
- 15:09-15:45** **BREAK**

- 15:45-16:54** **Session 10. Graph and Mesh Computations.** Session chair: Michael Bender
- 15:45-16:08 (Best Paper) Laxman Dhulipala, Guy Blelloch and Julian Shun.
Theoretically Efficient Parallel Graph Algorithms Can Be Fast and Scalable.
- 16:08-16:31 Gopal Pandurangan, Peter Robinson and Michele Squizzato.
On the Distributed Complexity of Large-Scale Graph Computations.
- 16:31-16:54 Predrag Gruevski, William Hasenplaugh, David Lugato and James Thomas.
Laika: Efficient In-Place Scheduling for 3D Mesh Graph Computations.