SPAA 2024 Schedule

Monday, June 17

9h00-10h20 New Algorithmic Results for Scheduling via Integer Linear Programming

10h40-12h00 Taming the Zoo of Parallel Machine Models

12h20-13h00 Lunch

13h00-17h00 Workshop on Recent Advances in Parallel and Concurrent Data Structures

15h00-19h00 Workshop on Highlights of Parallel Algorithms (HOPC)

19h00 SPAA Reception and HOPC Poster Session

Tuesday, June 18

8h45-9h00 Opening remarks

9h-10h keynote: Tim Harris  The growth of parallelism in machine learning inference

10h00-10h30 Break

10h30-12h10 Session 1: Scheduling (Chair: Yihan Sun)

Scheduling Out-Trees Online to Optimize Maximum Flow
Optimizing Dynamic Data Center Provisioning through Speed Scaling: A Primal-Dual Perspective
Scheduling Jobs with Work-Inefficient Parallel Solutions
Multi Bucket Queues: Efficient Concurrent Priority Scheduling
A Nearly Quadratic Improvement for Memory Reallocation

Brief Announcement: New Pruning Rules for Optimal Task Scheduling on Identical Parallel Machines
Brief Announcement: Scheduling Jobs for Minimum Span: Improved Bounds and Learning-Augmented Algorithms

12h10-13h40 Lunch

13h40-15h20 Session 2: Concurrency and machine learning (Chair: Naama Ben-David)

Expediting Hazard Pointers with Bounded RCU Critical Sections (Best Paper)
ALock: Asymmetric Lock Primitive for RDMA Systems
When Is Parallelism Fearless and Zero-Cost with Rust?
Efficient Parallel Reinforcement Learning Framework Using the Reactor Model
Parallel Best Arm Identification in Heterogeneous Environments

Brief Announcement: Lock-free Learned Search Data Structure
Brief Announcement: LIT: Lookup Interlocked Table for Range Queries
Brief Announcement: A Fast Scalable Detectable Unrolled Lock-Based Linked List

15h20-15h50 Break
15h50-17h30 Session 3: Algebra (Chair: Oded Schwartz)

An Optimal MPC Algorithm for Subunit-Monge Matrix Multiplication, with Applications to LIS
Distributed-Memory Randomized Algorithms for Sparse Tensor CP Decomposition
Minimum Cost Loop Nests for Contraction of a Sparse Tensor with a Tensor Network
Tightening I/O Lower Bounds through the Hourglass Dependency Pattern
A Framework for Parallelizing Approximate Gaussian Elimination
Fault-Tolerant Parallel Integer Multiplication

17h40-19h40 Business Meeting (Open to All)

Wednesday, June 19

9h00-10h00 keynote: Tim Roughgarden  The Economic Limits of Permissionless Consensus

10h00-10h30 Break

10h30-12h10 Session 4: Parallel Algorithms (Chair: Helen Xu)

Parallel and (Nearly) Work-Efficient Dynamic Programming (Best Paper Finalist)
Deterministic and Low Span Work-Efficient Parallel Batch-Dynamic Trees
The All Nearest Smaller Values Problem Revised in Practice, Parallel and External Memory
Log Diameter Rounds MST Verification and Sensitivity in MPC

Brief Announcement: Work Stealing through Partial Asynchronous Delegation
Brief Announcement: Red-Blue Pebbling with Multiple Processors: Time, Communication and Memory Trade-offs
Brief Announcement: (Near) Zero-overhead C++ Bindings for MPI

12h10-13h40 Lunch

13h40-14h50 Session 5: SPAA Parallel Computing Award Keynote (Chair: Kunal Agrawal)
“Every Computer-Science Department Should Include Software Performance Engineering in Its Curriculum” - Charles E. Leiserson

14h55-15h20 Session 6: Brief Announcements (Chair: Faith Ellen)
Brief Announcement: Upper and Lower Bounds for Edit Distance in Space-Efficient MPC
Brief Announcement: Tight bounds for Dynamic Bin Packing with Predictions
Brief Announcement: Suffix Analysis
Brief Announcement: Low-Bandwidth Matrix Multiplication: Faster Algorithms and More General Forms of Sparsity

15h20-15h50 Break

15h50-17h30 Session 7: Distributed Algorithms and GPU (Chair: Julian Shun)

Cost-Driven Data Replication with Predictions
Distributed Load Balancing in the Face of Reappearance Dependencies (Best Paper)
Fast Broadcast in Highly Connected Networks
PolarStar: Expanding the Horizon of Diameter-3 Networks
PC-oriented Prediction-based Runtime Power Management for GPGPU using Knowledge Transfer
Brief Announcement: ROMe: Wait-free Objects for RDMA
Brief Announcement: Scalable Distributed String Sorting
Brief Announcement: Racos: a Leaderless Erasure Coding State Machine Replication

Banquet

Thursday, June 20

9h00-10h00 keynote: Nicola Santoro/Peter Widmeyer (Dijkstra award) Time is not a Healer: Before and After

10h00-10h30 Break

10h30-12h10 Session 8: Graphs (Chair: Yan Gu)
Sparse Spanners with Small Distance and Congestion Stretches
Connected Components in Linear Work and Near-Optimal Time
A Simpler and Parallelizable $O(\sqrt{\log n})$-Approximation Algorithm for Sparsest Cut
Massively Parallel Algorithms for Approximate Shortest Paths
Parallel Dynamic Maximal Matching

Brief Announcement: PASGAL: Parallel And Scalable Graph Algorithm Library
Brief Announcement: Distributed Unconstrained Local Search for Multilevel Graph Partitioning
Brief Announcement: Minimizing the Weighted Average Shortest Path Length in Demand-Aware Networks via Matching Augmentation

12h10-13h40 Lunch

13h40-14h50 Session 9: SPAA Test-of-Time Award Keynote (Chair: Erez Petrank)
“Thread Scheduling for Multiprogrammed Multiprocessors” - Nimar S. Arora, Robert D. Blumofe, C. Greg Plaxton

14h50-15h30 Session 10: Scheduling (Chair: Panagiota Fatourou)
Stable Blockchain Sharding under Adversarial Transaction Generation
Efficient Multi-Processor Scheduling in Increasingly Realistic Models

15h30-15h50 Break

15h50-16h36 Session 11: Scheduling (Chair: Phil Gibbons)
Brief Announcement: Root-to-Leaf Scheduling in Write-Optimized Trees
Hardness and Tight Approximations of Demand Strip Packing (Best Paper Finalist)
Online Load and Graph Balancing for Random Order Inputs (Best Paper Finalist)

Friday, June 21

9h00-17h00 Distributed Computing with Emerging Hardware Technology – EMERALD