

SODA11 Schedule

Paper titles and author names appear as originally submitted.

Paper titles, author names and affiliations will be updated as submitted on the final papers for inclusion in the final printed program.

Saturday, January 22

6:30 PM - 8:30 PM

ACM-SIAM SODA Welcome Reception

Sunday, January 23

8:00 AM

Continental Breakfast

8:30 AM - 10:35 AM

Concurrent Sessions

Session 1A

Session Chair: Piotr Indyk, Massachusetts Institute of Technology, USA

8:30 AM

Optimal Bounds for Johnson-Lindenstrauss Transforms and Streaming Problems with Low Error

T.S. Jayram, D. Woodruff

8:55 AM

The Streaming Complexity of Cycle Counting, Sorting By Reversals, and Other Problems

E.Verbin, W. Yu

9:20 AM

Streaming ϵ -means on Well-Clusterable Data

V. Braverman, A. Meyerson, R. Ostrovsky, A. Roytman, M. Shindler, B. Tagiku

9:45 AM

Efficient Sketches for the Set Query Problem

E. Price

10:10 AM

Exponential Time Improvement for Min-Wise Based Algorithms

A. Shiftan, G. Feigenblat, E. Porat

Session 1B

Session Chair: David Shmoys, Cornell University, USA

8:30 AM

A Simple and Fast 2-approximation for the One-warehouse Multi-retailers Problem

G. Stauffer, G. Massonnet, C. Rapine, J. Gayon

8:55 AM

Generalized Machine Activation Problems

J. Li, S. Khuller

9:20 AM

An Online Scalable Algorithm for Minimizing ℓ_k -norms of Weighted Flow Time on Unrelated Machines

S. Im, B. Moseley

9:45 AM

Online Scalable Scheduling for the ℓ_k -norms of Flow Time Without Conservation of Work

J. Edmonds, S. Im, B. Moseley

10:10 AM

Online Scheduling on Identical Machines using SRPT

K. Fox, B. Moseley

Session 1C

Session Chair: Mordecai Golin, Hong Kong University of Science and Technology, Hong Kong

8:30 AM

A Complete Resolution of the Keller Maximum Clique Problem

W. Myrvold, J. Debroni, J. Eblen, M. Langston, P. Shor, D. Weerapurage

8:55 AM

On Independent Sets in Random Graphs

A. Coja-Oghlan, C. Efthymiou

9:20 AM

Coloring Random Graphs Online Without Creating Monochromatic Subgraphs

T. Mütze, T. Rast, R. Spöhel

9:45 AM

The Maximum Size of a Sidon Set Contained in a Sparse Random Set of Integers

Y. Kohayakawa, S. Lee, V. Rödl

10:10 AM

On Buffon Machines and Numbers

P. Flajolet, M. Pelletier, M. Soria

10:35 AM - 11:00 AM

Coffee Break

11:00 AM - 12:00 PM

Session 2: Invited Plenary Session

Session Chair: Dana Randall, Georgia Institute of Technology, USA

Graph Colouring via The Probabilistic Method

Bruce Reed, McGill University, Canada

12:00 PM - 1:30 PM

Luncheon

1:30 PM - 2:00 PM

Best Paper Presentation

Session Chair: David Kempe, University of Southern California, USA

An Almost Optimal Unrestricted Fast Johnson-Lindenstrauss Transform
N.Ailon, E. Liberty

2:00 PM - 2:10 PM

Intermission

2:10 PM - 4:15 PM

Concurrent Sessions

Session 3A

Session Chair: David Kempe, University of Southern California, USA

2:10 PM

A Stackelberg Strategy for Routing Flow over Time
U. Bhaskar, L.Fleischer, E. Anshelevich

2:35 PM

A Subexponential Lower Bound for the Random Facet Algorithm for Parity Games
O.Friedmann, T. Dueholm Hansen, U. Zwick

3:00 PM

On Minmax Theorems for Multiplayer Games
Y. Cai, C.Daskalakis

3:25 PM

Near-Optimal No-Regret Algorithms for Zero-sum Games
C. Daskalakis, A. Deckelbaum, A. Kim

3:50 PM

Local Smoothness and the Price of Anarchy in Atomic Splittable Congestion Games
T. Roughgarden, F. Schoppmann

Session 3B

Session Chair: Glencora Borradaile, Oregon State University, USA

2:10 PM

I/O-Efficient Contour Queries on Terrains
P. Agarwal, T. Moelhave, B. Sadri

2:35 PM

Implicit Flow Routing on Terrains with Applications to Surface Networks and Drainage Structures
M. de Berg, H. Haverkort, C. Tsirogiannis

3:00 PM

Shortest Non-Crossing Walks in the Plane

J.Erickson, A. Nayyeri

3:25 PM

Computing Shortest Paths amid Pseudodisks

D. Chen, H. Wang

3:50 PM

On the Complexity of Time-Dependent Shortest Paths

L. Foschini, J. Hershberger, S. Suri

Session 3C

Session Chair: Mordecai Golin, Hong Kong University of Science and Technology, Hong Kong

2:10 PM

A Master Theorem for Discrete Divide and Conquer Recurrence

M. Drmota, W. Szpankowski

2:35 PM

Optimal Pattern Matching in LZW Compressed Strings

P. Gawrychowski

3:00 PM

Random Access to Grammar Compressed Strings

P. Bille, G. Landau, R. Raman, K. Sadakane, S. Rao Satti, O. Weimann

3:25 PM

Ordered and Unordered Top-K Range Reporting in Large Data Sets

P. Afshani, G. Brodal, N.Zeh

3:50 PM

Top-K Color Queries for Document Retrieval

M.Karpinski, Y. Nekrich

4:15 PM - 4:40 PM

Coffee Break

4:40 PM - 6:45 PM

Concurrent Sessions

Session 4A

Session Chair: Navin Goyal, Microsoft Research, India

4:40 PM

Mobile Geometric Graphs: Detection, Coverage and Percolation

Y. Peres, A. Sinclair, P. Sousi, A. Stauffer

5:05 PM

Randomized Diffusion for Indivisible Loads

P. Berenbrink, C. Cooper, T. Friedetzky, T. Friedrich, T. Sauerwald

5:30 PM

Fast Information Spreading in Graphs with a Large Weak Conductance

K. Censor-Hillel, H. Shachnai

5:55 PM

On the Randomness Requirements of Rumor Spreading

G. Giakkoupis, P. Woelfel

6:20 PM

Rumor Spreading and Vertex Expansion

T. Sauerwald, A. Stauffer

Session 4B

Session Chair: David Shmoys, Cornell University, USA

4:40 PM

Bin Packing via Discrepancy of Permutations

F. Eisenbrand, P. Doemoetoer, T. Rothvoss

5:05 PM

Algorithms and Hardness for Subspace Approximation

A. Deshpande, M. Tulsiani, N. Vishnoi

5:30 PM

Approximating Matrix p -norms

A. Bhaskara, A. Vijayaraghavan

5:55 PM

Subsampling Mathematical Relaxations and Average-case Complexity

B. Barak, M. Hardt, T. Holenstein, D. Steurer

6:20 PM

Towards an SDP-based Approach to Spectral Methods: A Nearly-Linear Time Algorithm for Graph Partitioning and Sparsification

L. Orecchia, N. K. Vishnoi

Session 4C

Session Chair: Sean Hallgren, Pennsylvania State University, USA

4:40 PM

Faster Quantum Algorithm for Evaluating Game Trees

B. Reichardt

5:05 PM

Reflections for Quantum Query Algorithms

B. Reichardt

5:30 PM

Temperature 1 Self-Assembly: Deterministic Assembly in 3D and Probabilistic Assembly in 2D

M. Cook, Y. Fu, R. Schweller

5:55 PM

The Power of Nondeterminism in Self-Assembly

N. Bryans, E. Chiniforooshan, D. Doty, L. Kari, S. Seki

6:20 PM

Collapse

G. Rote, U. Zwick

Monday, January 24

8:00 AM

Continental Breakfast

8:30 AM - 10:35 AM

Concurrent Sessions

Session 5A

Session Chair: Kamal Jain, Microsoft Research, Redmond, USA

8:30 AM

Algorithms for Implicit Hitting Set Problems

K. Chandrasekaran, R. Karp, E. Moreno-Centeno, S. Vempala

8:55 AM

An Algorithmic Decomposition of Claw-free Graphs Leading to an $O(n^3)$ -algorithm for the Weighted Stable Set Problem

Y. Faenza, G. Oriolo, G. Stauffer

9:20 AM

Randomized Greedy: A New Look at Some Classic Approximation Algorithms

K. Costello, A. Shapira, P. Tetali

9:45 AM

Randomized Variants of Johnson's Algorithm for MAX SAT

M. Poloczek, G. Schnitger

10:10 AM

The Local Lemma is Tight for SAT

H. Gebauer, T. Szabo, G. Tardos

Session 5B

Session Chair: Sudipto Guha, University of Pennsylvania, USA

8:30 AM

Pricing on Paths: A PTAS for the Highway Problem

F. Grandoni, T. Rothvoss

8:55 AM

On the Approximability of Budget Feasible Mechanisms

N.Chen, N. Gravin, P.Lu

9:20 AM

Welfare Guarantees for Combinatorial Auctions with Item Bidding

K. Bhawalkar, T. Roughgarden

9:45 AM

Mechanism Design via Correlation Gap

Q. Yan

10:10 AM

Bayesian Incentive Compatibility via Fractional Assignments and Matchings

X. Bei, J. Hartline, Z. Huang, R. Kleinberg, A. Malekian

Session 5C

Session Chair: Valerie King, University of Victoria, Canada

8:30 AM

Bidimensionality and EPTAS

F. Fomin, D. Lokshtanov, V. Raman, S. Saurabh

8:55 AM

Slightly Superexponential Parameterized Problems

D. Lokshtanov, D. Marx, S. Saurabh

9:20 AM

Known Algorithms on Graphs of Bounded Treewidth are Probably Optimal

D. Lokshtanov, D.Marx, S. Saurabh

9:45 AM

Geometrically Embedded Local Search

C. Daskalakis, C. Papadimitriou

10:10 AM

Range Selection and Median: Tight Cell Probe Lower Bounds and Adaptive Data Structures

A. Jørgensen, K. Dalgaard Larsen

10:35 AM - 11:00 AM

Coffee Break

11:00 AM - 12:00 PM

Session 6: Invited Plenary Session

Session Chair: Piotr Indyk, Massachusetts Institute of Technology, USA

Where Computer Vision Needs Help from Computer Science
William Freeman, Massachusetts Institute of Technology, USA

12:00 PM - 1:30 PM

Lunch (attendees on their own)

1:30 PM - 3:35 PM

Concurrent Sessions

Session 7A

Session Chair: Valerie King, University of Victoria, Canada

1:30 PM

An Optimal-Time Construction of Sparse Euclidean Spanners with Tiny Diameter
S.Solomon

1:55 PM

Fast, Precise and Dynamic Distance Queries
Y. Bartal, L.Gottlieb, T. Kopelowitz, M. Lewenstein, L. Roditty

2:20 PM

Approximate Nearest Neighbor Search for Low Dimensional Queries
S. Har-Peled, N. Kumar

2:45 PM

Dimensionality Reduction: Beyond the Johnson-Lindenstrauss Bound
Y. Bartal, B. Recht, L. Schulman

3:10 PM

A Nonlinear Approach to Dimension Reduction
L.Gottlieb, R. Krauthgamer

Session 7B

Session Chair: Dana Randall, Georgia Institute of Technology, USA

1:30 PM

Hitting Time Results for Maker-Breaker Games
S. Ben-Shimon, A. Ferber, D. Hefetz, M. Krivelevich

1:55 PM

Packing Tight Hamilton Cycles in 3-uniform Hypergraphs
A. Frieze, M. Krivelevich, P. Loh

2:20 PM

Networks of Random Cycles

A. Handley, M. Dyer, C. Cooper

2:45 PM

Phase Transition for Glauber Dynamics for Independent Sets on Regular Trees

R. Restrepo, D. Stefankovic, J. Vera, E. Vigoda, L. Yang

3:10 PM

On Belief Propagation Guided Decimation for Random k-SAT

A. Coja-Oghlan

Session 7C

Session Chair: Shuchi Chawla, University of Wisconsin, Madison, USA

1:30 PM

The Asymmetric Traveling Salesman Problem on Graphs with Bounded Genus

S. Oveis Gharan, A. Saberi

1:55 PM

Capacitated Metric Labeling

M. Andrews, M. Hajiaghayi, H. Karloff, A. Moitra

2:20 PM

Multicommodity Facility Location under Group Steiner Access Cost

L. Poplawski, R. Rajaraman

2:45 PM

Survivable Network Design Problems in Wireless Networks

D. Panigrahi

3:10 PM

Prize-collecting Steiner Problems on Planar Graphs

M. Bateni, C. Chekuri, A. Ene, M. Taghi Hajiaghayi, N. Korula, D. Marx

3:35 PM - 4:00 PM

Coffee Break

4:00 PM - 6:05 PM

Concurrent Sessions

Session 8A

Session Chair: Sudipto Guha, University of Pennsylvania, USA

4:00 PM

On Graph Crossing Number and Edge Planarization

J. Chuzhoy, Y. Makarychev, A. Sidiropoulos

4:25 PM

Ranking with Submodular Valuations

Y. Azar, I. Gamzu

4:50 PM

Multi-budgeted Matchings and Matroid Intersection via Dependent Rounding

C. Chekuri, J. Vondrák and R. Zenklusen

5:15 PM

Submodular Maximization by Simulated Annealing

S. Gharan, J. Vondrák

5:40 PM

The Matroid Median Problem

R. Krishnaswamy, V. Nagarajan, B. Saha, Y. Sabharwal, A. Kumar

Session 8B

Session Chair: Ileana Streinu, Smith College, USA

4:00 PM

Persistent Predecessor Search and Orthogonal Point Location on the Word RAM

T. Chan

4:25 PM

New Approximation Algorithms for Minimum Enclosing Convex Shapes

A. Saha, S. Vishwanathan

4:50 PM

Computing the Independence Number of Intersection Graphs

J. Fox, J. Pach

5:15 PM

Minimum Cuts and Shortest Non-Separating Cycles via Homology Covers

J. Erickson, A. Nayyeri

5:40 PM

Embedding Stacked Polytopes on a Polynomial Sized Grid

E. Demaine, A. Schulz

Session 8C

Session Chair: Navin Goyal, Microsoft Research, India

4:00 PM

Overlap Properties of Geometric Expanders

J. Fox, M. Gromov, V. Lafforgue, A. Naor, J. Pach

4:25 PM

On the Degree Distribution of Random Planar Graphs

K. Panagiotou, A. Steger

4:50 PM

Component Structure Induced by a Random Walk on a Random Graph

C. Cooper, A. Frieze

5:15 PM

The Multiple-orientability Thresholds for Random Hypergraphs

N. Fountoulakis, M. Khosla, K. Panagiotou

5:40 PM

The Rigidity Transition in Random Graphs

S. Kasiviswanathan, C. Moore, L. Theran

8:00 PM - 9:00 PM

Business Meeting

Tuesday, January 25

8:00 AM

Continental Breakfast

8:30 AM - 10:35 AM

Concurrent Sessions

Session 9A

Session Chair: Satyen Kale, Yahoo Research, USA

8:30 AM

Online Vertex-Weighted Bipartite Matching and Single-bid Budgeted Allocations

G. Aggarwal, G. Goel, C. Karande, A. Mehta

8:55 AM

Secretary Problems: Laminar Matroid and Interval Scheduling

S.Im, Y.Wang

9:20 AM

Matroid Secretary Problem in the Random Assignment Model

J.Soto

9:45 AM

Online Stochastic Matching: Online Actions Based on Offline Statistics

V. Manshadi, S. Oveis Gharan, A. Saberi

10:10 AM

An Optimal Lower Bound for Buffer Management in Multi-Queue Switches

M. Bienkowski

Session 9B

Session Chair: Glencora Borradaile, Oregon State University, USA

8:30 AM

An Intersection Model for Multitolerance Graphs: Efficient Algorithms and Hierarchy

G. Mertzios

8:55 AM

Faster and Dynamic Algorithms For Maximal End-Component Decomposition And Related Graph Problems In Probabilistic Verification

K. Chatterjee, M. Henzinger

9:20 AM

Faster Replacement Paths

V. Vassilevska Williams

9:45 AM

Computing Replacement Paths in Surface Embedded Graphs

J. Erickson, A. Nayyeri

10:10 AM

Improved Dynamic Algorithms for Maintaining Approximate Shortest Paths Under Deletions

A. Bernstein, L. Roditty

Session 9C

Session Chair: Kamal Jain, Microsoft Research, Redmond, USA

8:30 AM

Algebraic Algorithms for Linear Matroid Parity Problems

H. Cheung, L. Chi Lau, K. Man Leung

8:55 AM

On Parity Check (0,1)-Matrix over \mathbb{Z}_p

N. Bshouty, H. Mazzawi

9:20 AM

Code Equivalence and Group Isomorphism

L. Babai, P. Codenotti, J. Grochow, Y. Qiao

9:45 AM

Efficient Algorithms for Some Special Cases of the Polynomial Equivalence Problem

N. Kayal

10:10 AM

Low Rank Matrix-valued Chernoff Bounds and Approximate Matrix Multiplication

A. Magen, A. Zouzias

10:35 AM - 11:00 AM

Coffee Break

11:00 AM - 12:00 PM

Session 10: Invited Plenary Session

Session Chair: Ileana Streinu, Smith College, USA

Computational Geometry for Non-Geometers: Recent Developments on Some Classical Problems
Timothy Chan, University of Waterloo, Canada

12:00 PM - 1:30 PM

Lunch (attendees on their own)

1:30 PM - 3:35 PM

Concurrent Sessions

Session 11A

Session Chair: Mihai Patrascu, AT&T Labs-Research, USA

1:30 PM

Improved Deterministic Algorithms for Decremental Transitive Closure and Strongly Connected Components

J.Łącki

1:55 PM

Approximating the Girth

L.Roditty, R. Tov

2:20 PM

Approximating the Statistics of various Properties in Randomly Weighted Graphs

Y.Emek, A. Korman, Y. Shavitt

2:45 PM

Counting and Detecting Small Subgraphs Via Equations and Matrix Multiplication

M. Kowaluk, A.Lingas, E. Lundell

3:10 PM

Succinct Convex Greedy Drawing of 3-Connected Plane Graphs

X.He, H. Zhang

Session 11B

Session Chair: Artur Czumaj, University of Warwick, United Kingdom

1:30 PM

Distributed Selfish Load Balancing on Networks

P. Berenbrink, M. Hoefer and T. Sauerwald

1:55 PM

On the Complexity of Approximating a Nash Equilibrium

C. Daskalakis

2:20 PM

Fast Convergence of Natural Bargaining Dynamics on Exchange Networks

Y. Kanoria, M. Bayati, J. Chayes, C. Borgs, A. Montanari

2:45 PM

Wireless Capacity with Oblivious Power in General Metrics

M. Halldórsson, P. Mitra

3:10 PM

A Constant-Factor Approximation for Wireless Capacity Maximization with Power Control in the SINR Model

T. Kesselheim

Session 11C

Session Chair: Vitaly Feldman, IBM Almaden, USA

1:30 PM

On LP-based Approximability for Strict CSPs

A. Kumar, R. Manokaran, M. Tulsiani, N. Vishnoi

1:55 PM

Tight Bounds on the Approximability of Almost-satisfiable Horn SAT and Exact Hitting Set

V. Guruswami, Y. Zhou

2:20 PM

Hardness Results for Agnostically Learning Low-Degree Polynomial Threshold Functions

I. Diakonikolass, R. O'Donnell, R. Servedio, Y. Wu

2:45 PM

Tight Hardness Results for Minimizing Discrepancy

M. Charikar, A. Newman, A. Nikolov

3:10 PM

The Complexity of Finding Independent Sets in Bounded Degree (Hyper)graphs of Low Chromatic Number

V. Guruswami, A. Kemal Sinop

3:35 PM - 4:00 PM

Coffee Break

4:00 PM - 5:45 PM

Concurrent Sessions

Session 12A

Session Chair: Artur Czumaj, University of Warwick, United Kingdom

4:00 PM

Risk-Averse Stochastic Optimization: Probabilistically-Constrained Models and Algorithms for Black-Box Distributions

C. Swamy

4:25 PM

Improved Approximation Results for Stochastic Knapsack Problems

A. Bhargat, A. Goel, S.Khanna

4:50 PM

The Stubborn Problem is Stubborn No More (A Polynomial Algorithm for 3-compatible Colouring and the Stubborn List Partition Problem)

M. Cygan, M. Pilipczuk, M. Pilipczuk, J. Wojtaszczyk

5:15 PM

Approximate Dynamic Programming using Halfspace Queries and Multiscale Monge Decomposition

G. Miller, R. Peng, R. Schwartz, C. Tsourakakis

Session 12B

Session Chair: Vitaly Feldman, IBM Almaden, USA

4:00 PM

Nearly Tight Bounds for Testing Function Isomorphism

S. Chakraborty, D.Garcia-Soriano, A. Matsliah

4:25 PM

The Dichotomy of List Homomorphisms for Digraphs

P.Hell, A. Rafiey

4:50 PM

Dichotomy for Holant* Problems of Boolean Domain

J. Cai, P. Lu, M. Xia

5:15 PM

Bounding the Randomized Decision Tree Complexity of Read-Once Boolean Functions

K. Amano

Session 12C

Session Chair: Mihai Patrascu, AT&T Labs-Research, USA

4:00 PM

Improved Space Bounds for Cache-Oblivious Range Reporting

P. Afshani, N. Zeh

4:25 PM

Triangulating the Square: Quadrees and Delaunay Triangulations are Equivalent

M. Löffler, W. Mulzer

4:50 PM

Improved Bound for the Union of Fat Triangles

E. Ezra, B. Aronov, M. Sharir

5:45 PM

Conference Adjourns