

Curriculum Vitae

Udi Wieder

Research Interests My main research area is the design and analysis of algorithms and data structures. My core areas are hashing, resource allocations and scheduling. I have worked on a variety of other topics including nearest neighbor search for high dimensional data, online algorithms, algorithms on graphs, sketching and sampling of data.

Personal Details

Email: udi.wieder@gmail.com

Home Page: <http://udiwieder.wordpress.com>

Employment

Researcher

Microsoft Research Silicon Valley.
January 2007 – September 2014

Postdoc Researcher

Microsoft Research Silicon Valley.
September 2005 – January 2007

Software Engineer

Intel Jerusalem (part time).
1997-1998

Education

Weizmann Institute of Science

Ph.D in Computer Science *January 2002 - August 2005*

Thesis Subject: Scalable and Dynamic Data Structures.

Advisor: Prof. Moni Naor

Weizmann Institute of Science

M.Sc in Computer Science *October 1999 – December 2001*

Thesis subject: Edge Coloring a Multigraph with a Fixed Number of Colors.

Advisor: Prof. Uri Feige

The Hebrew University

B.Sc in Computer Science and Economics

October 1996 – October 1999.

Awards

The Haim Holtzman Memorial Ph.D distinction prize, The Weizmann Institute of Science, 2005.

Dean's list for academic excellence, The Weizmann Institute of Science, 2004.

Hebrew University, Faculty of Exact Sciences Dean's list in the academic year 1996-7.

Professional Activities

Program Committees: PODC 2006, DISC 2007, ITCS 2014, STOC 2015

Interns

Gil Segev: Now at the Hebrew University

Alexandr Andoni: Joined MSR at 2010

Elisa Celis: Now at EPFL

Ravishankar Krishnaswami: Now at MSR-India

Mohsen Ghafarri

Patents

Maintaining Privacy During User Profiling

Patent number: 8520842

Inventors: Nir Nice, Ehud Wieder, Boaz Feldbaum, Sefy Ophir, Eran Shamir, Yacov Yacobi, Arie Friedman

Issued: August 27, 2013

Virtual Machine Packing Method Using Scarcity

Patent number: 8464267

Inventors: Lincoln K. Uyeda, Rina Panigrahy, Ehud Wieder, Kunal Talwar

Issued: June 11, 2013

Scheduling ready tasks by generating network flow graph using information receive from root task having affinities between ready task and computers for execution

Patent number: 8332862

Inventors: Michael Isard, Vijayan Prabhakaran, Jonathan James Currey, Ehud Wieder, Kunal Talwar

Issued: December 11, 2012

Maintaining Privacy During Personalized Content Delivery

Application number: 20110167003

Inventors: Nir Nice, Ehud Wieder, Arie Friedman

Issued: July 7, 2011

Multiphase Virtual Machine Host Capacity Planning

Application number: 20100281478

Inventors: Larry Jay Sauls, Sanjay Gautam, Ehud Wieder, Rina Panigrahy, Kunal Talwar

Issued: November 4, 2010

Data and replica placement using r-out-of-k hash functions

Application number: 20080065704

Inventors: John Philip MacCormick, Nicholas Murphy, Venugopalan Ramasubramanian, Ehud Wieder, Lidong Zhou, Junfeng Yang

Issued: March 13, 2008

Teaching

The Open University of Israel

Teacher of the graduate course *Randomized Algorithms*, 2002-2005

Teacher of the graduate course *Parallel Algorithms*, 2003-2004

Teacher of the graduate course *Selected Topics in Algorithms*, 2001

Teacher assistant of the course *Algorithms* 2000-2001

Tel-Aviv College

Teacher of the course *Introduction to Algorithms*, 2001

*Conference
Papers*

Omer Reingold, Ron D. Rothblum, Udi Wieder
Pseudorandom Graphs in Data Structures. In *Proceedings of the 41'st International Colloquium on Automata, Languages and Programming (ICALP) 2014*.

Anupam Gupta, Kunal Talwar, Udi Wieder
Changing Bases: Multistage Optimization for Matroids and Matchings. In *Proceedings of the 41'st International Colloquium on Automata, Languages and Programming (ICALP) 2014*.

Kunal Talwar, Udi Wieder
Balanced Allocations: A Simple Proof for the Heavily Loaded Case. In *Proceedings of the 41'st International Colloquium on Automata, Languages and Programming (ICALP) 2014*.

Rasmus Pagh, Gil Segev, Udi Wieder
How to Approximate a Set without Knowing Its Size in Advance. In *Proceedings of the 54'th annual IEEE Symposium on Foundations of Computer Science (FOCS) 2013*.

Aditya Bhaskara, Ravishankar Krishnaswamy, Kunal Talwar, Udi Wieder
Minimum Makespan Scheduling with Low Rank Processing Times. In *24'th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA) 2013*.

L. Elisa Celis, Omer Reingold, Gil Segev, Udi Wieder
Balls and Bins: Smaller Hash Families and Faster Evaluation. In *Proceedings of the 52'nd annual IEEE Symposium on Foundations of Computer Science (FOCS) 2011*.

Rina Panigrahy, Kunal Talwar, Udi Wieder
Lower Bounds on Near Neighbor Search via Metric Expansion. In *Proceedings of the 51'st annual IEEE Symposium on Foundations of Computer Science (FOCS) 2010*.

Yuval Peres, Kunal Talwar, Udi Wieder
The $(1+\beta)$ -Choice Process and Weighted Balls into Bins. In *21'st Annual ACM-SIAM Symposium on Discrete Algorithms (SODA) 2010*.

Michael Isard, Vijayan Prabhakaran, Jon Currey, Udi Wieder, Kunal Talwar, Andrew Goldberg
Quincy: Fair Scheduling for Distributed Computing Clusters. In *Proceedings of 22nd ACM Symposium on Operating Systems Principles (SOSP) 2009*.

Dahlia Malkhi, Siddhartha Sen, Kunal Talwar, Renato Werneck, Udi Wieder
Virtual Ring Routing Trends. In *DISC 2009*.

Thomas Holenstein, Michael Mitzenmacher, Rina Panigrahy, Udi Wieder
Trace reconstruction with constant deletion probability and related results. In *Nineteenth Annual ACM-SIAM Symposium on Discrete Algorithms (SODA) 2008*.

Rina Panigrahy, Kunal Talwar, Udi Wieder
A Geometric Approach to Lower Bounds for Approximate Near-Neighbor Search and Partial Match. In *Proceedings of the 49th annual IEEE Symposium on Foundations of Computer Science (FOCS) 2008*.

Moni Naor, Gil Segev, Udi Wieder
History-Independent Cuckoo Hashing. In *Proceedings of the 35th international colloquium on Automata, Languages and Programming (ICALP) 2008*.

Adam Kirsch, Michael Mitzenmacher, Udi Wieder
More Robust Hashing: Cuckoo Hashing with a Stash. In *Proceedings of the 16th annual European symposium on Algorithms (ESA) 2008*.

Udi Wieder
Balanced Allocations with Heterogeneous Bins. In *Nineteenth ACM Symposium on Parallelism in Algorithms and Architectures (SPAA) 2007*.

Kunal Talwar, Udi Wieder
Balanced Allocations: the Weighted Case. In *The Thirty-Ninth Annual ACM Symposium on Theory of Computing (STOC) 2007*.

Ittai Abraham, Cyril Gaviolle, Dahlia Malkhi, Udi Wieder
Strongly-Bounded Sparse Decompositions of Minor Free Graphs. In *Nineteenth ACM Symposium on Parallelism in Algorithms and Architectures (SPAA) 2007*.

James Aspnes, Udi Wieder
The Expansion and Mixing Time of Skip Graphs with Applications. In *Seventeenth ACM Symposium on Parallelism in Algorithms and Architectures (SPAA) 2005*.

Omer Angel, Itai Benjamini, Eran Ofek, Udi Wieder
Routing Complexity of Faulty Networks. In *Twenty Fourth ACM Symposium on Principles of Distributed Computing (PODC), 2005*.

Gurmeet Manku, Moni Naor, Udi Wieder
Know thy Neighbor's Neighbor: The Power of Lookahead in Randomized P2P Networks. In *Thirty-Sixth Annual ACM Symposium on Theory of Computing (STOC) 2004*.

Moni Naor, Udi Wieder
Know thy Neighbor's Neighbor: Better Routing for Skip-Graphs and Small Worlds. In *Third International Workshop on Peer-to-Peer Systems (IPTPS), 2004, Lecture Notes in Computer Science 3279, Springer, 2004*.

Moni Naor, Udi Wieder
Scalable and Dynamic Quorum Systems. In *Twenty-Second ACM Symposium on Principles of Distributed Computing (PODC) , 2003*.

Moni Naor, Udi Wieder
A Simple Fault Tolerant Distributed Hash Table. In *Second International Workshop on Peer-to-Peer Systems (IPTPS) 2003, Lecture Notes in Computer Science 2735, Springer, 2003*.

Moni Naor, Udi Wieder
Novel Architectures for P2P Applications: the Continuous-Discrete Approach. In *Fifteenth ACM Symposium on Parallelism in Algorithms and Architectures (SPAA), 2003*.

Eran Ofek, Uriel Feige, Udi Wieder
Approximating Maximum Edge Coloring in Multigraphs. In *Proceedings of the 5th International Workshop on Approximation Algorithms for Combinatorial Optimization (APPROX) 2002*.

Journal Papers

Yuval Peres, Kunal Talwar, Udi Wieder
Graphical Balanced Allocations and the $(1+\beta)$ -choice Process. In *Random Structures and Algorithms 2014*.

L. Elisa Celis, Omer Reingold, Gil Segev, Udi Wieder
Balls and Bins: Smaller Hash Families and Faster Evaluation. In *Siam J. Computing 2013*.

Ittai Abraham, Cyril Gaviolle, Dahlia Malkhi, Udi Wieder
Strongly-Bounded Sparse Decompositions of Minor Free Graphs. In *Theory of Computing Systems 2010*.

Adam Kirsch, Michael Mitzenmacher, Udi Wieder
More Robust Hashing: Cuckoo Hashing with a Stash. In *Siam Journal Computing 2009*.

John MacCormick, Nick Murphy, Venugopalan Ramasubramanian, Udi Wieder, Jinfeng Yang, Lidong Zhou
Kinesis: The Power of Controlled Freedom in Distributed Storage Systems. In *Transactions on Storage 2009*

James Aspnes, Udi Wieder
The Expansion and Mixing Time of Skip Graphs with Applications. In *Distributed Computing 2009*.

Omer Angel, Itai Benjamini, Eran Ofek, Udi Wieder
Routing Complexity of Faulty Networks. In *Random Structures and Algorithms 32(1) 2008*.

Moni Naor, Udi Wieder
Novel Architectures for P2P Applications: the Continuous-Discrete Approach. In *Transactions on Algorithms 3(3) 2007*.

Moni Naor, Udi Wieder
Scalable and Dynamic Quorum Systems. In *Distributed Computing 17(4), 2005*.

Manuscripts

Sangmin Lee, Rina Panigrahy, Vijayan Prabhakaran, Venugopalan Ramasubramanian, Kunal Talwar, Lincoln Uyeda, Udi Wieder
Validating Heuristics for Virtual Machines Consolidations. In *MSR-TR, 2011*.

Rina Panigrahy, Kunal Talwar, Lincoln Uyeda, Udi Wieder
Heuristics for Vector Bin Packing. In *MSR-TR, 2011*.