

David Wajc

(דוד וייץ)

Curriculum Vitae

Management Science and Engineering
Stanford University
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ACADEMIC POSITION

STANFORD UNIVERSITY

Motwani Postdoctoral Fellow in Theoretical Computer Science

- **Host:** Amin Saberi.

Stanford, CA

Sep. 2020 – present

RESEARCH INTERESTS

I am broadly interested in algorithms under uncertainty. Examples include

- **Online algorithms**
- **Dynamic algorithms**
- **Streaming algorithms**
- **Distributed algorithms**

I also like to think about the interplay between linear programming, probability theory and theoretical computer science.

I have an affinity for problems related to **matching theory**.

EDUCATION

CARNEGIE MELLON UNIVERSITY

Ph.D. in Computer Science (Algorithms, Combinatorics and Optimization)

- **Advisor:** Bernhard Haeupler.
- **Thesis Title:** “Matching Algorithms Under Uncertainty”.
- **Committee:** Bernhard Haeupler, Anupam Gupta, R. Ravi, Cliff Stein, Ola Svensson.

Pittsburgh, PA

Aug. 2014 – Aug. 2020

TECHNION – ISRAEL INSTITUTE OF TECHNOLOGY

M.Sc. in Computer Science

- **Advisors:** Nir Ailon, Seffi Naor and Hadas Shachnai.
- **Thesis Title:** “Parameterizing P: Proximity to Easy Variants”.

Haifa, Israel

Mar. 2010 – Dec. 2013

CARNEGIE MELLON UNIVERSITY

Foreign Exchange student, part of B.Sc. in Computer Science

Pittsburgh, PA

Aug. 2009 – Jan. 2010

TECHNION – ISRAEL INSTITUTE OF TECHNOLOGY

B.Sc. in Computer Science (Summa Cum Laude)

Haifa, Israel

Oct. 2006 – Dec. 2010

SELECTED HONORS AND AWARDS

- Stanford Motwani Postdoctoral Fellowship. 2020
- Yahoo! Labs Excellence Awards Program (LEAP). 2014
- Vivian Konigsberg Award for Excellence in Teaching. 2012

- Sandor Szego Award for Excellence in Teaching. 2011
- Technion Graduate School Dean's Excellence Award. 2010
- Carnegie Mellon School of Computer Science Dean's List (highest honors). 2009
- Participation in the "Outstanding Students in Computer Science" (SAMBA) program, granting living expenses, an office, and an option to TA as an undergraduate student. 2009
- Technion President's List (highest honors): three semesters. 2008 – 2009

CONFERENCE PAPERS

21. ["Online Stochastic Max-Weight Bipartite Matching: Beyond Prophet Inequalities"](#).
with Christos Papadimitriou, Tristan Pollner & Amin Saberi.
In ACM Conference on Economics and Computation, 2021. (EC 21)
 20. ["The Greedy Algorithm is *not* optimal for On-Line Edge Coloring"](#).
with Amin Saberi.
In International Colloquium on Automata, Languages, and Programming, 2021. (ICALP 21)
 19. ["Near-Optimal Schedules for Simultaneous Multicasts"](#).
with Bernhard Haeupler & D. Ellis Hershkowitz.
In International Colloquium on Automata, Languages, and Programming, 2021. (ICALP 21)
 18. ["Universally-Optimal Distributed Algorithms for Known Topologies"](#).
with Bernhard Haeupler & Goran Zuzic.
In ACM Symposium on Theory of Computing, 2021. (STOC 21)
 17. ["Streaming Submodular Matching Meets the Primal-Dual Method"](#).
with Roie Levin.
In ACM-SIAM Symposium on Discrete Algorithms, 2021. (SODA 21)
 16. ["Online Algorithms for Edge Coloring via the Nibble Method"](#).
with Sayan Bhattacharya and Fabrizio Grandoni.
In ACM-SIAM Symposium on Discrete Algorithms, 2021. (SODA 21)
 15. ["Network Coding Gaps for Completion Times of Multiple Unicasts"](#).
with Bernhard Haeupler & Goran Zuzic.
In IEEE Symposium on Foundations of Computer Science, 2020. (FOCS 20)
 14. ["Rounding Dynamic Matchings Against an Adaptive Adversary"](#).
David Wajc.
In ACM Symposium on Theory of Computing, 2020. (STOC 20)
 13. ["Online Matching with General Arrivals"](#).
with Buddhima Gamalath, Michael Kapralov, Andreas Maggiori & Ola Svensson.
In IEEE Symposium on Foundations of Computer Science, 2019. (FOCS 19)
 12. ["Tight Bounds for Online Edge Coloring"](#).
with Ilan R. Cohen & Binghui Peng.
In IEEE Symposium on Foundations of Computer Science, 2019. (FOCS 19)
(HALG 20)
- Invited to Highlights of Algorithms 2020**
11. ["Stochastic Online Metric Matching"](#).
with Anupam Gupta, Guru Guruganesh & Binghui Peng.
In International Colloquium on Automata, Languages, and Programming, 2019. (ICALP 19)
 10. ["Simplified and Space-Optimal Semi-Streaming for \$\(2+\epsilon\)\$ -Approximate Matching"](#).
with Mohsen Ghaffari.
In Symposium on Simplicity in Algorithms, 2019. (SOSA 19)
 9. ["Round- and Message-Optimal Distributed Graph Algorithms"](#).
with Bernhard Haeupler & D. Ellis Hershkowitz.
In ACM SIGACT-SIGOPS Symposium on Principles of Distributed Computing, 2018. (PODC 18)
 8. ["Dynamic Matching: Reducing Integral Algorithms to Approximately-Maximal Fractional Algorithms"](#).
with Moab Arar, Shiri Chechik, Sarel Cohen & Cliff Stein.
In International Colloquium on Automata, Languages, and Programming, 2018. (ICALP 18)
 7. ["Fully-Dynamic Bin Packing with Little Repacking"](#).
with Björn Feldkord, Matthias Feldotto, Anupam Gupta, Guru Guruganesh, Amit Kumar & Sören Riechers.
In International Colloquium on Automata, Languages, and Programming, 2018. (ICALP 18)

6. [“Randomized Online Matching in Regular Graphs”](#).
with Ilan R. Cohen.
In ACM-SIAM Symposium on Discrete Algorithms, 2018. **(SODA 18)**
5. [“Approximation-Variance Tradeoffs in Facility Location Games”](#).
with Ariel Procaccia & Hanrui Zhang.
In AAAI Conference on Artificial Intelligence, 2018. **(AAAI 18)**
4. [“A Faster Distributed Radio Broadcast Primitive \(Extended Abstract\)”](#).
with Bernhard Haeupler.
In ACM SIGACT-SIGOPS Symposium on Principles of Distributed Computing, 2016. **(PODC 16)**
3. [“Near-Optimum Online Ad Allocation for Targeted Advertising”](#).
with Joseph (Seffi) Naor.
In ACM Conference on Economics and Computation, 2015. **Invited to Special Issue** **(EC 15)**
2. [“You Will Get Mail! Predicting the Arrival of Future Email”](#).
with Iftah Gamzu, Zohar Karnin & Yoelle Maarek.
In Temporal Web Analytics Workshop, 2015. **(TempWeb 15)**
1. [“Best-Response Dynamics Out of Sync: Complexity and Characterization”](#).
with Roe Engelberg, Alex Fabrikant & Michael Schapira.
In ACM Conference on Electronic Commerce, 2013. **(EC 13)**

JOURNAL PAPERS

2. [“Near-Optimum Online Ad Allocation for Targeted Advertising”](#).
with Joseph (Seffi) Naor.
In Transactions on Economics and Computation, 2018. **Special Issue on EC 15** **(TEAC 18)**
1. [“On the Complexity of Vertex-Coloring Edge-Weightings”](#).
with Andrzej Dudek.
In Discrete Mathematics & Theoretical Computer Science, 2011. **(DMTCS 11)**

MANUSCRIPTS

1. [“Rounding Bipartite Matchings Online without Loss and with Optimal Randomness”](#).
with Niv Buchbinder & Seffi Naor.

NOTES

1. [“Negative Association – Definition, Properties, and Applications”](#). **(2017)**
David Wajc.

PATENTS

- Zohar Karnin, Edo Liberty, David Wajc and Guy Halawi. “Method and System for Identification of Subject Line Templates.” US Patent #10885548B2. 2021.
- Zohar Karnin, Guy Halawi, David Wajc and Edo Liberty. “Method and System for Classifying Man vs. Machine Generated e-mail.” US Patent #10778618B2. 2020.
- Zohar Karnin, Iftah Gamzu, David Wajc and Yoelle Maarek. “Method for Predicting Future Email.” US Patent #US010397152B2. 2019.

INVITED TALKS

1. [“Online Stochastic Max-Weight Bipartite Matching: Beyond Prophet Inequalities”](#).
 - Tel Aviv University. Tel Aviv, Israel (virtually). Apr. 2021.
 - Simons Institute for the Theory of Computing. Berkeley, CA (virtually). Mar. 2021
2. [“Rounding Dynamic Matchings Against an Adaptive Adversary”](#).
 - Hong Kong University. Hong Kong, China (virtually). Apr. 2021.
 - Weizmann Institute. Rehovot, Israel (virtually). Mar. 2021.

- MIT. Cambridge, MA (virtually). Feb. 2021.
 - Carnegie Mellon University. Pittsburgh, PA (virtually). Nov. 2020.
 - Stanford University. Stanford, CA (virtually). July + Oct. 2020.
3. [“Randomized Rounding in the Face of Uncertainty”](#).
 - Toyota Technological Institute. Chicago, IL. Jan. 2020.
 4. [“Online Matching with General Arrivals”](#).
 - Cornell University. Ithaca, NY. Feb. 2020.
 - University of Maryland. College Park, MD. Nov. 2019.
 - Carnegie Mellon University. Pittsburgh, PA. Oct. 2019.
 - University of Washington. Seattle, WA. Oct. 2019.
 - Stanford University. Palo Alto, CA. Sep. 2019.
 - UC Berkeley. Berkeley, CA. Sept. 2019.
 5. [“Online Dependent Rounding”](#).
 - HALG 2019. Copenhagen, Denmark. June 2019.
 6. [“Network Coding Gaps for Completion Times of Multiple Unicasts”](#).
 - Rutgers. New Brunswick, New Jersey (virtually). Oct. 2020.
 - Technion. Haifa, Israel. June 2019.
 - Tel Aviv University. Tel Aviv, Israel. June 2019.
 - Bar Ilan University. Ramat Gan, Israel. June 2019.
 - Ben Gurion University. Beer Sheva, Israel. June 2019.
 - University of Toronto. Toronto, ON, Canada. Apr. 2019.
 7. [“Tight Bounds for Online Edge Coloring”](#).
 - HALG 2020. Zurich, Switzerland (virtually). Aug. 2020.
 - Columbia University. New York, NY. Jan. 2019.
 - Carnegie Mellon University. Pittsburgh, PA. Jan. 2019.
 - ETH Zurich. Zurich, Switzerland. Dec. 2018.
 - CWI. Amsterdam, Netherlands. Oct. 2018.
 - EPFL. Lausanne, Switzerland. Oct. 2018.
 8. [“Online Matching in Regular Graphs \(and Beyond\)”](#).
 - MOLI@ICALP 2018. Prague, Czech Republic. July 2018.
 - ISMP 2018. Bordeaux, France. July 2018.
 9. [“Fully-Dynamic Bin Packing with Limited Recourse”](#).
 - Carnegie Mellon University. Pittsburgh, PA. Feb. 2018.
 10. [“Randomized Online Matching in Regular Graphs”](#).
 - Google. Mountain View, CA. Aug. 2017.
 - Technion. Haifa, Israel. July 2017.
 - Tel Aviv University. Tel Aviv, Israel. July 2017.
 - Carnegie Mellon University. Pittsburgh, PA. May 2017.
 11. [“A Faster Distributed Radio Broadcast Primitive”](#).
 - Carnegie Mellon University. Pittsburgh, PA. May 2016.
 12. [“Near-Optimum Online Ad Allocation for Targeted Advertising”](#).
 - Technion. Haifa, Israel. Nov. 2014
 - Google. Pittsburgh, PA. Oct. 2014.
 - Carnegie Mellon University. Pittsburgh, PA. Sep. 2014.

TEACHING EXPERIENCE

CARNEGIE MELLON UNIVERSITY

Pittsburgh, PA

As Ph.D. student:

1. **TA, Graduate Algorithms**

2. TA, Probability and Computing

- Wrote course recitations and lecture (book chapter on the uses of hashing).

TECHNION – ISRAEL INSTITUTE OF TECHNOLOGY

Haifa, Israel

As M.Sc. student:

3. TA, Data Structures 1 (5 semesters overall, 4 as head TA)

- Rewrote course lectures and recitations.

4. Head TA, Algorithms 1 (2 semesters)

As B.Sc. student:

5. TA, Introduction to Systems Programming

6. TA, Introduction to CS

7. Tutor in various courses, among which:

- Introduction to {CS, Systems Programming, Algorithms and Data Structures}, Linear Algebra.

RESEARCH VISITS

École polytechnique fédérale de Lausanne (EPFL)

Lausanne, Switzerland

Visiting Student Researcher

Sept. 2018 – Dec. 2018

- Hosted by Ola Svensson.

Simons Institute for the Theory of Computing, UC Berkeley

Berkeley, CA

Visiting Student Researcher

- Participated in the program “Online and Matching-Based Market Design”.
- Participated in the program “Bridging Continuous and Discrete Optimization”.
- Participated in the program “Algorithms and Uncertainty”.

Aug. 2019 – Oct. 2019

Aug. 2017 – Oct. 2017

Aug. 2016 – Dec. 2016

Technion – Israel Institute of Technology

Haifa, Israel

Visiting Student Researcher

Dec. 2016 – Jan. 2017

- Hosted by Seffi Naor.

WORK EXPERIENCE

Google Research

New York, NY

Summer Intern

May 2015 – Aug. 2015

- Interned with the Market Algorithms and Optimization team, hosted by Nitish Korula.
- Worked on research problems related to display advertising.

Yahoo! Labs

Haifa, Israel

Research Engineer

Nov. 2012 – May 2014

- Part of the Mail Research Team. Working on research and engineering projects related to information extraction from emails to improve user experience as well as ad monetization.

IBM R&D Labs

Haifa, Israel

Summer Intern

July 2010 – Oct. 2010

- Worked on a research problem related to soft error detection.

COMMUNITY SERVICE

- Program committee member for:
 - SODA 2022.
 - HALG 2021.
 - ESA 2020 (Track A).

- Reviewed and sub-reviewed for:
 - **Conferences:** FOCS, STOC, SODA, ICALP, PODC, DISC, SPAA, ESA, IPCO, APPROX, SOSA, WINE, AAAI, AAMAS, ALENEX, WAOA, SAGT, SOFSEM, TAMC.
 - **Journals:** J.ACM, SICOMP, TALG, Math of OR, TCS, TOC, IPL, JPDC, Discrete Applied Mathematics.
- Co-organizer of the TCS+ online seminar series. 2021 – present
- Organizer of Stanford Theory Lunch. 2020 – present
- CMU Tech Nights (outreach program, teaching CS to middle school girls). 2019 – 2020
- CMU CSD Speakers Club (reviewing presentations made as part of PhD program). 2018 – 2020
- CSD Ph.D. Mentor (mentoring junior Ph.D. student in the CS department). 2017 – 2020
- CMU CSD Ph.D. admissions committee. 2017 – 2018
- Co-organized reading group on concentration inequalities at Simons “Algorithms and Uncertainty” program. 2017
- Co-organized CMU Theory group’s first Theory Retreat. 2016
- Co-organized CMU Theory Lunch. (Secured funding from Yahoo! Labs.) 2015
- Organized the Food For Thought (FFT) seminar at Yahoo! Labs Haifa. 2014 – 2015

ADDITIONAL INFORMATION

- **Languages:** Native English, French and Hebrew; Intermediate Chinese (Mandarin).
- **Citizenships:** Israel, Belgium.
- **Software:** C/C++, Java, scripting languages (C-Shell, Bash, DOS Batch), Python, Matlab.
- **Technologies:** Hadoop MapReduce, Weka.
- **Puzzle Aficionado:** I am an avid puzzler, and admin of a puzzle group on Facebook with over 1000 members, where CS-related puzzles and solutions are shared. (See <https://www.facebook.com/groups/219533614735653/>. Alternatively, look up “Computer Science Puzzles”).