

David Wajc

Curriculum Vitae

School of Computer Science
Carnegie Mellon University
5000 Forbes Avenue, Pittsburgh, PA

www.cs.cmu.edu/~dwajc
dwajc@cs.cmu.edu
Phone: +412-499-0094

EDUCATION

CARNEGIE MELLON UNIVERSITY, SCHOOL OF COMPUTER SCIENCE

Pittsburgh, PA

Ph.D. in Computer Science

August 2014 – August 2020 (expected)

- **Advisor:** Bernhard Haeupler.
- **Research interests:** Algorithms under uncertainty. Examples include {online, dynamic, distributed} algorithms.
- Eight papers published (see below).

THE TECHNION, ISRAEL INSTITUTE OF TECHNOLOGY

Haifa, Israel

M.Sc. in Computer Science

March 2010 – December 2013

- **Advisors:** Nir Ailon, Seffi Naor and Hadas Shachnai.
- **Research interests:** Graph algorithms.
- **Thesis Title:** "Parameterizing P: Proximity to Easy Variants".
 - Focused on closing the complexity gap between classic graph problems - shortest path problems and weighted matching problems - and their restricted counterparts. (E.g. non-negative weight function for single-source shortest paths, and maximum cardinality matching for weighted matching problems.)
- Thesis Grade: 92/100.
- Cumulative GPA 93.6/100.
- One paper published (see below).

CARNEGIE MELLON UNIVERSITY, SCHOOL OF COMPUTER SCIENCE

Pittsburgh, PA

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

August 2009 – January 2010

- GPA 4.0.
- One paper published (see below).

THE TECHNION, ISRAEL INSTITUTE OF TECHNOLOGY

Haifa, Israel

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

October 2006 – December 2010

- Cumulative GPA 93/100.

HONORS AND AWARDS

- 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 exclusive "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

PAPERS

1. “Simplified and Space-Optimal Semi-Streaming for $(2+\epsilon)$ -Approximate Matching”, Mohsen Ghaffari & David Wajc,
To appear in the Symposium on Simplicity in Algorithms, 2019. (SOSA 19)
2. “Round- and Message-Optimal Distributed Graph Algorithms”, Bernhard Haeupler, D. Ellis Hershkowitz
& David Wajc.
In ACM SIGACT-SIGOPS Symposium on Principles of Distributed Computing, 2018. (PODC 18)
3. “Dynamic Matching: Reducing Integral Algorithms to Approximately-Maximal Fractional Algorithms”,
Moab Arar, Shiri Chechik, Sarel Cohen, Cliff Stein & David Wajc.
In International Colloquium on Automata, Languages, and Programming, 2018. (ICALP 18)
4. “Fully-Dynamic Bin Packing with Little Repacking”, Björn Feldkord, Matthias Feldotto, Anupam Gupta,
Guru Guruganesh, Amit Kumar, Sören Riechers & David Wajc.
In International Colloquium on Automata, Languages, and Programming, 2018. (ICALP 18)
5. “Randomized Online Matching in Regular Graphs”, Ilan R. Cohen & David Wajc.
In ACM-SIAM Symposium on Discrete Algorithms, 2018. (SODA 18)
6. “Approximation-Variance Tradeoffs in Facility Location Games”, Ariel Procaccia, David Wajc & Hanrui Zhang.
In AAAI Conference on Artificial Intelligence, 2018. (AAAI 18)
7. “A Faster Distributed Radio Broadcast Primitive (Extended Abstract)”, Bernhard Haeupler & David Wajc.
In ACM SIGACT-SIGOPS Symposium on Principles of Distributed Computing, 2016. (PODC 16)
8. “Near-Optimum Online Ad Allocation for Targeted Advertising”, Joseph (Seffi) Naor & David Wajc.
In ACM Conference on Electronic Commerce, 2015. (EC 15)
Invited to the ACM Transactions on Economics and Computation Special Issue for EC 15. (TEAC 18)
9. “You Will Get Mail! Predicting the Arrival of Future Email”, Iftah Gamzu, Zohar Karnin, Yoelle Maarek & David Wajc.
In Temporal Web Analytics Workshop, 2015. (TempWeb 15)
10. “Best-Response Dynamics Out of Sync: Complexity and Characterization”, Roe Engelberg, Alex Fabrikant,
Michael Schapira & David Wajc.
In ACM Conference on Electronic Commerce, 2013. (EC 13)
11. “On the Complexity of Vertex-Coloring Edge-Weightings”, Andrzej Dudek & David Wajc.
In Discrete Mathematics & Theoretical Computer Science, 2011. (DMTCS 11)

MANUSCRIPTS

1. “Tight Bounds for Online Edge Coloring”, Ilan R. Cohen, Binghui Peng & David Wajc. (2018)
2. “Stochastic Online Metric Matching”, Anupam Gupta, Guru Guruganesh, Binghui Peng & David Wajc. (2019)
3. “Online Matching with General Arrivals”, Buddhima Gamlath, Michael Kapralov, Andreas Maggiori,
Ola Svensson & David Wajc. (2019)
4. “Network Coding Gaps for Completion Times of Multiple Unicasts”, Bernhard Haeupler, Goran Zuzic
& David Wajc. (2019)

INVITED TALKS

1. “The Greedy Algorithm is **Not** Optimal for On-line Edge Coloring” (Tight Bounds for Online Edge Coloring).
 - 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.
2. “Online Matching in Regular Graphs (and Beyond)”.
 - MOLI@ICALP 2018. Prague, Czech Republic. July 2018.
 - ISMP 2018. Bordeaux, France. July 2018.

3. "Fully-Dynamic Bin Packing with Limited Recourse".
 - Carnegie Mellon University. Pittsburgh, PA. Feb. 2018.
4. "Randomized Online Matching in Regular Graphs".
 - Google Mountain View. 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.
5. "A Faster Distributed Radio Broadcast Primitive".
 - Carnegie Mellon University. Pittsburgh, PA. May 2016.
6. "Near-Optimum Online Ad Allocation for Targeted Advertising".
 - Technion. Haifa, Israel. Nov. 2014
 - Google Pittsburgh. 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**
 - o Wrote course recitations and lecture (book chapter on the uses of hashing).

THE TECHNION, ISRAEL INSTITUTE OF TECHNOLOGY

Haifa, Israel

As M.Sc. student:

3. **TA, Data Structures 1** (5 semesters overall, 4 as head TA)
 - o 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:**
 - o Introduction to {CS, Systems Programming, Algorithms and Data Structures}, Linear Algebra.

RESEARCH VISITS

École polytechnique fédérale de Lausanne (EPFL)

Lausanne, Switzerland

Visiting Student Researcher

September 2018 – December 2018

- Hosted by Ola Svensson.

Simons Institute for the Theory of Computing, UC Berkeley

Berkeley, CA

Visiting Student Researcher

August 2017 – October 2017

- Participated in the program "Bridging Continuous and Discrete Optimization".

Visiting Student Researcher

August 2016 – December 2016

- Participated in the program "Algorithms and Uncertainty".
- Three papers written (one appeared in SODA'18, two appeared in ICALP'18).

The Technion, Israel Institute of Technology

Haifa, Israel

Visiting Student Researcher

December 2016 – January 2017

- Hosted by Seffi Naor.

WORK EXPERIENCE

Google Research

New York, NY

Summer Intern

May 2015 – August 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

November 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.
- Organized a series of mini-courses taught by the lab's research scientists.
- One paper published (see above).
- Three patents submitted (see below).

IBM R&D Labs

Haifa, Israel

Summer Intern

July 2010 – October 2010

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

PATENTS

- Zohar Karnin, Edo Liberty, David Wajc and Guy Halawi. "Method and System for Identification of Subject Line Templates." Patent pending.
- Zohar Karnin, Guy Halawi, David Wajc and Edo Liberty. "Method and System for Classifying Man vs. Machine Generated e-mail." Patent pending.
- Zohar Karnin, Iftah Gamzu, David Wajc and Yoelle Maarek. "Method for Predicting Future Email." Patent pending.

COMMUNITY SERVICE

- Reviewed and sub-reviewed for:
Conferences:
 - STOC, FOCS, SODA, ICALP, IPCO, AAI, SPAA, WAOA, WINE, SAGT, AAMAS, SOFSEM, TAMC.Journals:
 - J.ACM, SICOMP, TALG, Mathematics of OR, TCS, IPL, JPDC, Discrete Applied Mathematics.
- CMU CSD Speakers Club (reviewing presentations made as part of PhD program). 2018-present
- CSD Ph.D. Mentor (mentoring junior Ph.D. student in the CS department). 2017-present
- CMU CSD Ph.D. admissions committee. 2017-2018
- Co-organized CMU Theory group's first Theory Retreat. 2016
- Co-organized CMU Theory Lunch. 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").