

Date: March 2017

RESUME

Full name: Dan Garber

Identity No. 039924402

Date and place of birth: 8/5/1983 Haifa, Israel

Marital status: Married + 3

ACADEMIC DEGREES

- 2015 Department of Industrial Engineering & Management
Technion – Israel Institute of Technology
Ph.D.
Thesis: Projection-free Algorithms for Convex Optimization and Online Learning
- 2012 Department of Computer Science
Technion – Israel Institute of Technology
M.Sc. Cum Laude
Thesis: Approximating Semidefinite Programs in Sublinear Time
- 2010 Department of Electrical Engineering
Technion – Israel Institute of Technology
B.Sc. Cum Laude

ACADEMIC APPOINTMENTS

- Mar. 17- Senior Lecturer
present Department of Industrial Engineering and Management
Technion – Israel Institute of Technology
- Jan. 16- Research Assistant Professor
Feb. 17 Toyota Technological Institute at Chicago, IL, USA

RESEARCH INTERESTS

Machine Learning and Optimization. In particular, the design of efficient algorithms with novel and provable performance guarantees for machine learning, data analysis, sequential decision making and optimization problems. Notable examples: fast projection-free algorithms for convex optimization, online learning and statistical learning, efficient algorithms for principal component analysis, and sublinear-time algorithms for semidefinite programming.

TEACHING EXPERIENCE

1. Lecturer in *Stochastic Simulation*, an undergraduate course at the IE&M department at the Technion
2. Teaching Assistant in *Stochastic Simulation*, an undergraduate course at the IE&M department at the Technion
3. Teaching Assistant in *Introduction to Probability Theory*, an undergraduate course at the IE&M department at the Technion
4. Teaching Assistant in *Computer Organization and Programming*, an undergraduate course at the CS department at the Technion
5. Teaching Assistant in *Introduction to Computer Science*, an undergraduate course at the CS department at the Technion
6. Teaching Assistant in *Data Structures*, an undergraduate course at the CS department at the Technion
7. Teaching Assistant in *Introduction to Systems Programming*, an undergraduate course at the CS department at the Technion

PUBLICATIONS

Theses

1. M.Sc. Thesis: Approximating Semidefinite Programs in Sublinear Time, Technion Department of Computer Science
2. Ph.D. Thesis: Projection-free Algorithms for Convex Optimization and Online Learning, Technion Department of Industrial Engineering and Management

Refereed papers in professional journals

- J1. Dan Garber and Elad Hazan. Universal Adaptive Linear Filtering. *IEEE Transactions on Signal Processing*, 61(7): 1595-1604, 2013
- J2. Dan Garber and Elad Hazan. Sublinear Time Algorithms for Approximate Semidefinite Programming. *Mathematical Programming Series A*, Volume 158, Issue 1, pages 329-361, 2016
- J3. Dan Garber and Elad Hazan. A Linearly Convergent Conditional Gradient Algorithm with Applications to Online and Stochastic Optimization. *SIAM Journal on Optimization*, Volume 26, Issue 3, pages 1493-1528, 2016

Refereed papers in conference proceedings

- C1. Dan Garber and Elad Hazan. Approximating Semidefinite Programs in Sublinear Time. Neural Information Processing Systems (NIPS), 1080-1088, 2011, Granada, Spain
- C2. Dan Garber and Elad Hazan. Playing Non-linear Games with Linear Oracles. Foundations of Computer Science (FOCS), 420-428, 2013, Berkeley, CA
- C3. Christos Boutsidis, Dan Garber, Zohar Karnin and Edo Liberty. Online Principal Component Analysis. Symposium on Discrete Algorithms (SODA), 887-901, 2015, San Diego, CA
- C4. Dan Garber and Elad Hazan. Faster Rates for The Frank-Wolfe Method over Strongly-Convex Sets. International Conference on Machine Learning (ICML), 541-549, 2015, Lille, France
- C5. Dan Garber, Elad Hazan and Tengyu Ma. Online Learning of Eigenvectors. International Conference on Machine Learning (ICML), 560-568, 2015, Lille, France
- C6. Dan Garber, Elad Hazan, Chi Jin, Sham M. Kakade, Cameron Musco, Praneeth Netrapalli and Aaron Sidford. Faster Eigenvector Computation via Shift-and-Invert Preconditioning. International Conference on Machine Learning (ICML), 2626-2634, 2016, New York, NY
- C7. Jialei Wang, Weiran Wang, Dan Garber and Nathan Srebro. Efficient Globally Convergent Stochastic Optimization for Canonical Correlation Analysis. Neural Information Processing Systems (NIPS), 766-774, 2016, Barcelona, Spain
- C8. Dan Garber. Faster Projection-free Convex Optimization over the Spectrahedron. Neural Information Processing Systems (NIPS), 874-882, 2016, Barcelona, Spain
- C9. Dan Garber and Ofer Meshi. Linear-memory and Decomposition-invariant Linearly Convergent Conditional Gradient Variant for Convex Optimization over Structured Polytopes. Neural Information Processing Systems (NIPS), 1001-1009, 2016, Barcelona, Spain

Research reports and other publications

1. Dan Garber and Elad Hazan. Fast and Simple PCA via Convex Optimization. Preprint, <http://arxiv.org/abs/1509.05647>
2. Dan Garber, Ohad Shamir and Nathan Srebro. Communication-efficient Algorithms for Distributed Principal Component Analysis. In preparation

CONFERENCES

Plenary, keynote or invited talks

1. Sublinear-time Algorithms for Semidefinite Programming. Technion-Erasmus Workshop on Optimization Methods Applied to Operations Research and Engineering, Ein-Gedi, Israel, November 2011. Invited talk

2. Approximating Semidefinite Programs in Sublinear Time. Operations Research Societies Israel Conference (ORSIS), Ma'ale Hahamisha, Israel, June 2012. Invited talk.
3. A Linearly Convergent Conditional Gradient Algorithm with Applications to Stochastic and Online Optimization. International Conference on Continuous Optimization (ICCOPT), Lisbon, Portugal, July 2013. Invited talk
4. Projection-free Online Learning. Electronic-Commerce Day, Technion - Israel Institute of Technology, Haifa, Israel, October 2013. Invited talk
5. Faster Projection-free Convex Optimization with Structured Matrices. SIAM Conference on Optimization 2017, Vancouver, British Columbia, Canada, May 2017. Invited talk

Presentations in conferences

1. Dan Garber and Elad Hazan. Approximating Semidefinite Programs in Sublinear Time. Neural Information Processing Systems (NIPS), 2011, Granada, Spain
2. Dan Garber and Elad Hazan. Playing Non-linear Games with Linear Oracles. Foundations of Computer Science (FOCS), 2013, Berkeley, CA (delivered by Elad Hazan)
3. Christos Boutsidis, Dan Garber, Zohar Karnin and Edo Liberty. Online Principal Component Analysis. Symposium on Discrete Algorithms (SODA), 2015, San Diego, CA (delivered by Zohar Karnin)
4. Dan Garber and Elad Hazan. Faster Rates for The Frank-Wolfe Method over Strongly-Convex Sets. International Conference on Machine Learning (ICML), 2015, Lille, France
5. Dan Garber, Elad Hazan and Tengyu Ma. Online Learning of Eigenvectors. International Conference on Machine Learning (ICML), 2015, Lille, France
6. Dan Garber, Elad Hazan, Chi Jin, Sham M. Kakade, Cameron Musco, Praneeth Netrapalli and Aaron Sidford. Faster Eigenvector Computation via Shift-and-Invert Preconditioning. International Conference on Machine Learning (ICML), New York, NY
7. Jialei Wang, Weiran Wang, Dan Garber and Nathan Srebro. Efficient Globally Convergent Stochastic Optimization for Canonical Correlation Analysis. Neural Information Processing Systems (NIPS) 2016, Barcelona, Spain
8. Dan Garber. Faster Projection-free Convex Optimization over the Spectrahedron. Neural Information Processing Systems (NIPS) 2016, Barcelona, Spain
9. Dan Garber and Ofer Meshi. Linear-memory and Decomposition-invariant Linearly Convergent Conditional Gradient Variant for Convex Optimization over Structured Polytopes. Neural Information Processing Systems (NIPS) 2016, Barcelona, Spain. Special oral presentation (top 1.8% of submissions)

Selected talks in seminars

1. Approximating Semidefinite Programs in Sublinear Time. Advanced Algorithms Seminar, Tel Aviv University, Tel-Aviv, Israel, June 2012
2. Adaptive Universal Linear Filtering. Information Theory Seminar, Technion - Israel Institute of Technology, Haifa, Israel, February 2013
3. Playing Non-linear Games with Linear Oracles. Advanced Algorithms Seminar, Tel-Aviv University, Tel-Aviv, Israel, March 2013
4. Playing Non-linear Games with Linear Oracles. Foundations of Computer Science Seminar, Weizmann Institute, Rehovot, Israel, May 2014
5. Online Algorithms for Principal Component Analysis. CS Theory Seminar, Bar Ilan University, Ramat-Gan, Israel, December 2014
6. Projection-free Optimization and Learning. CS Theory Seminar, Princeton University, Princeton, NJ, February 2015
7. Projection-free Optimization and Learning. Microsoft Research, Redmond, WA, February 2015
8. Projection-free Optimization and Learning. Combinatorics and Optimization Seminar, Centrum Wiskunde & Informatica (CWI), Amsterdam, The Netherlands, March 2015
9. Projection-free Optimization and Learning. Operations Research Seminar, Université catholique de Louvain (UCL), Louvain-la-Neuve, Belgium, March 2015
10. Projection-free Optimization and Learning. Machine Learning Seminar, INRIA Rhone-Alpes, Grenoble, France, March 2015
11. Fast and Simple PCA via Convex Optimization. Optimization and Statistical Learning Seminar, Northwestern University, Evanston, IL, April 2016
12. Projection-free Optimization and Learning. Systems, Information, Learning and Optimization Seminar, University of Wisconsin-Madison, Madison, WI, September 2016