

RESUME

1. PERSONAL DETAILS

Full name: Shimrit Shtern

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2. ACADEMIC DEGREES

Ph.D., Faculty of Industrial Engineering and Management, Technion – IIT, Nov. 2015

M.Sc. in Operations Research and System Analysis, Summa Cum Laude, Faculty of Industrial Engineering and Management, Technion – IIT, 2008.

B.Sc. in Industrial Engineering and Management, Summa Cum Laude, Faculty of Industrial Engineering and Management, Technion – IIT, 2002.

3. ACADEMIC APPOINTMENTS

March 2018- present: Senior Lecturer (Assistant Professor), Faculty of Data and Decision Sciences (formerly William Davidson Faculty of Industrial Engineering and Management), Technion - IIT.

Jan. 2018 – Mar. 2018: Temporary administrative appointment as lecturer, William Davidson Faculty of Industrial Engineering and Management, Technion - IIT.

Sep. 2015 – Dec 2017: Postdoctoral Associate and Lecturer, Operations Research Center, MIT.
Host: Prof. Dimitris Bertsimas.

4. PROFESSIONAL EXPERIENCE (outside academia)

2008–2011: Senior Algorithm Developer and Technical Leader, Image Processing Group, Rafael Ltd.

2004–2008: Operations Research Officer, The Logistics and Medicine Branch, IDF.

2001–2004: Researcher, Center of Military Analysis (CEMA), Rafael Ltd.

5. RESEARCH INTERESTS

Optimization applications: inventory systems, estimation and control, statistics, and healthcare; Robust and adaptive optimization; Data-driven optimization; (Non)convex and (non)smooth optimization theory and algorithms; First-order and primal-dual methods.

6. TEACHING EXPERIENCE

Lecturer at the Technion

Optimization 1 - 098311 (Graduate) – Main Teacher,
Spring 2017, Winter 2018-2022.

Optimization under uncertainty - 096335 (Graduate/Undergraduate) – Main Teacher,
Spring 2018, Spring 2019-23 (4.14).
Designed as new course in the Technion.

Deterministic Models in OR 094313 (Undergraduate) – Main Teacher, Spring 2019 (4.09), Winter
2021-2022 (3.95), Winter 2022-2023 (3.96).

Lecturer at MIT

Optimization methods 15.093/6.255 (undergraduate/graduate) – Main Teacher, Winter 2017 – 80
students.

7. TECHNION ACTIVITIES.

8. DEPARTMENTAL ACTIVITIES

February 2022 – present – Organization of faculty's graduate seminar.

June 2019-September 2019 – Head of SHOHAM joint program with the IDF for M.Sc. in OR.

March 2018-June 2019 – Secretary of Faculty council, Faculty of IE&M, Technion - IIT.

9. PUBLIC PROFESSIONAL ACTIVITIES

Editorial board: Guest Editor for Open Journal of Mathematical Optimization, special issue on
“Optimization in the Second Level” on bilevel and robust optimization and the connections
between them. [Call for submissions](#).

Referee in peer reviewed journal: Management Science, Operations Research, SIAM Journal on
Optimization, Mathematical Programming, Mathematics of Operations Research, INFORMS
journal on Optimization, Computational Optimization and Applications, IEEE Transactions on
Automatic Control, IISE Transactions, IEEE Transactions on Pattern Analysis and Machine
Intelligence.

Grant review: Netherlands Organization for Scientific Research (NWO) VENI grant referee
2020.

Council Member: OR society of Israel (ORSIS) 2020-present.

10. MEMBERSHIP IN PROFESSIONAL SOCIETIES

INFORMS, SIAM, MOS, ORSIS.

11. FELLOWSHIPS, AWARDS AND HONORS

2018-2021 The Nancy and Stephen Grand Career Advancement Chair, Technion,

2015 INFORMS student award in optimization honorable mention, INFORMS optimization
society.

2015 Reuven Rubinstein travel scholarship – awarded by the faculty of IE&M, Technion,

2015 Graduate Student Excellence scholarship, Technion.

2013-2014 The Irwin and Joan Jacobs fellowship for excellence, Technion.

2013 Technion MIT Internship Program (TMIP) Scholarship, Technion.

Student Awards

2019 – MIT Operations Research Center Best Student Paper Award for Bradley Sturt for our work D. Bertsimas, S. Shtern, B. Sturt, “A data-driven approach to multi-stage linear optimization”, 2018.

December 2019 – Eyal Gur – 3rd place in the IE&M faculty research day poster competition.

12. GRADUATE STUDENTS

Completed MSc theses

Eyal Gur, 2019,

Thesis title: First-Order Methods for Solving the Sensor Network Localization Problem, co-primary advisor with Shoham Sabach (co-primary advisor).

Currently a Ph.D. candidate at the faculty of IE&M, Technion.

Ido Yerenburg, 2021,

Thesis title: Online Distributionally Robust Optimization, primary advisor.

Data Scientist in IDF’s Intelligence Corps

Lior Doron, 2021,

Thesis title: First order methods for non-smooth bi-level optimization problems, primary advisor.

Major in the IDF’s Navy

Daniel Engel, Expected 2025.

13. SPONSORED LONG-TERM VISITORS AND POST-DOCTORAL ASSOCIATES

14. RESEARCH GRANTS

Competitive

2019-2022 The Israel Science Foundation (ISF), Personal Research Grant number 1460/19, "Data-driven optimization under uncertainty", 570,000 NIS.

2019 The Israel Science Foundation (ISF), Equipment Grant for a New Faculty, number 1863/19, 82,000 NIS.

2023-2025 The Deutsche Forschungsgemeinschaft (DFG), Middle east collaboration proposal 524165670, "Data-driven Optimization Techniques for Integrated Process Planning and Scheduling", joint with Erwin Pesch (University of Siegen) and Izack Cohen (Bar-Ilan University), 57,000 EURO.

2023-2026 The Israel Science Foundation (ISF), Personal Research Grant number 1603/23, "Algorithms for Structured Bi-level optimization", 480,000 NIS.

15.PUBLICATIONS

*In all published papers, accept my two Ph.D. papers with advisor Aharon Ben-Tal, the author order is alphabetical.

* Eyal Gur was co-advised by myself and Shoham Sabach and is now a Ph.D. student of Shoham Sabach

15.1 Theses

Ph.D. Thesis: Robust Tracking via Semidefinite Programming and Nonconvex Quadratically Constrained Quadratic Programming (Supervisor: Prof. Aharon Ben-Tal).

Master's Thesis: Robust Multi-Echelon Inventory Control (Supervisors: Prof. Boaz Golany and Prof. Aharon Ben-Tal).

15.2 Refereed papers in professional journals

Published papers

1. Ben-Tal, A., Golany, B., and **Shtern, S.**, "Robust Multi-Echelon, Multi-Period Inventory Control". European Journal of Operational Research, Vol. 199, pp. 198-208, 2009.
2. **Shtern, S.**, and Ben-Tal, A., "Computational Methods for Solving Nonconvex Block Constrained Quadratic Problems", Technion Report IE/OR-2013-01, SIAM Journal of Optimization, Vol. 26(2), pp. 1174-1206, 2016.
3. **Shtern, S.**, and Ben-Tal, A., "A Semi-Definite Programming Approach for Robust Tracking", Mathematical Programming, Vol. 156(1-2), pp. 615-656, 2016.
4. Beck, A., and **Shtern S.**, "Linearly Convergent Away-Step Conditional Gradient for Non-strongly Convex Functions", Mathematical Programming, Vol. 164(1-2), pp 1-27, 2017.
5. Sabach, S. and **Shtern, S.**, "A First-Order Method for Solving Convex Bi-Level Optimization Problems", SIAM Journal of Optimization, Vol 27(2), pp. 640-660, 2017.
6. Bertsimas, D., Sanders, Z., and **Shtern, S.**, "Multi-Target Tracking via Mixed Integer Optimization", IEEE Transactions in Automatic Control, Vol. 63(11), pp. 3627-3642, 2018.
7. Gur, E., Sabach, S., and **Shtern, S.**, "Alternating Minimization Based First-Order Method for the Wireless Sensor Network Localization Problem", IEEE Transactions on Signal Processing, Vol. 68, pp. 6418-6431, 2020.
8. Bertsimas, D., **Shtern, S.**, and Sturt, B., "Two-stage sample robust optimization", Operations Research, Vol. 70(1) pp. 624-640, 2021. (Accepted 2020)
9. Dvurechensky, P., **Shtern, S.**, Staudigl, M., and Safin, K., "Generalized Self-concordant analysis of Frank-Wolfe algorithms", Mathematical Programming, 2022. <https://doi.org/10.1007/s10107-022-01771-1>
10. Gur, E., Sabach S., and **Shtern, S.**, "Convergent Nested Alternating Minimization Algorithms for Non-Convex Optimization Problems", Mathematics of Operations Research, 2022. <https://doi.org/10.1287/moor.2022.1256>
11. Doron L., and **Shtern S.**, "Methodology and First-order Algorithms for Solving Nonsmooth and Non-strongly Convex Bilevel Optimization Problems", Mathematical Programming, 2022. <https://doi.org/10.1007/s10107-022-01914-4>
12. Bertsimas, D., **Shtern, S.**, and Sturt, B., "A Data-Driven Approach for Multi-Stage Linear Optimization", Management Science, 69(1), 51-74, 2023. (Accepted 2021)

13. Cohen, I., Postek, K., and **Shtern, S.**, “An Adaptive Robust Optimization Model for Parallel Machine Scheduling”, *European Journal of Operational Research*, 306(1), 83-104, 2023.
14. Gur, E., Sabach, S., and **Shtern, S.**, “Nested Alternating Minimization with FISTA for Non-convex and Non-smooth Optimization Problems”. *Journal of Optimization and Applications* (2023). <https://doi.org/10.1007/s10957-023-02310-4>

Accepted papers

1. Postek, K., and **Shtern, S.**, “A First-order Method for Robust Optimization Problems”, accepted for publication in *Inform Journal on Computing*, June 2023.

Submitted papers

1. Goldberg, N., Langer M.P., and **Shtern S.**, “Robust Radiotherapy Planning with Spatially Based Uncertainty Sets” Submitted to *Inform Journal on Computing* (June 2023).
2. Dvurechensky, P., **Shtern, S.**, and Staudigl, M. “A Conditional Gradient Homotopy Method with Applications to Semidefinite Programming”. Submitted to *ICML 2023* (August 2023).

15.3 Review papers

Published papers

1. Dvurechensky, P., **Shtern, S.**, and Staudigl, M. “First-order methods for convex optimization”, in “20 years of EurOpt,” ed. M. F. Anjos, T. Illés, and T. Terlaky, special issue, *EURO Journal on Computational Optimization*, 9, 100015, 2021.

15.4 Refereed conference papers

1. Dvurechensky, P., **Shtern, S.**, Staudigl, M., Ostroukhov, P., and Safin, K. (2020). “Self-concordant analysis of Frank-Wolfe algorithms”, in *Proceedings of the 27th International Conference on Machine Learning (ICML 2020)*, 2020.

16. CONFERENCES

Invited Talks

“First-order distributionally robust optimization”, talk in invited session in *XVI International Conference Stochastic Programming 2023*, Davis (CA), USA.

“Radiotherapy Planning with Spatially Dependent Uncertainty Sets”, talk in invited session in *ICCOPT 2022*, PA, USA.

“First-order methods for nonsmooth and non-strongly convex bilevel optimization”, talk in invited session in *SIOPT (SIAM Optimization) 2021*, WA, USA.

“First-order methods for nonsmooth and non-strongly convex bilevel optimization”, talk in invited session in the *IMU (Israeli Mathematical Union) annual meeting 2021*, Be’er Sheva (Israel), July 2021.

“A First-order Method for Robust Optimization Problems”, talk in a sponsored session in the *Optimization under Uncertainty cluster, INFORMS annual meeting 2019*, Seattle (WA), October 2019.

“Data-Driven Two-Stage Linear Optimization: Feasibility and Approximation Guarantees”, talk in an invited session in the Robust Optimization cluster. ICCOPT 2019, Berlin (Germany), August 2019.

“Data-Driven Two-Stage Linear Optimization: Feasibility and Approximation Guarantees”, BIRS Workshop on Sequential Decision Making under Uncertainty, Banff (AB, Canada), January 2019.

“A Scalable Algorithm for Two-Stage Adaptive Optimization with Feasibility Guarantees”, talk in an invited session in the Robust Optimization stream, ISMP 2018, Bordeaux (France), July 2018.

“Multi-target Tracking Via Mixed Integer Optimization”, talk in a sponsored session in the Optimization under Uncertainty stream, INFORMS Annual Meeting 2016, Nashville (TN, USA), November 2016.

“A First Order Method for Solving Convex Bi-Level Optimization Problems”, talk in a sponsored session in the Optimization cluster, INFORMS International 2016, Big Island (HI, USA), June 2016.

“Linearly Convergent Away-Step Conditional Gradient for Non-strongly Convex Functions”, talk in invited session in the Nonsmooth Optimization cluster, 22nd International Symposium on Mathematical Programming (ISMP 2015), Pittsburgh (PA, USA), 2015.

“Linearly Convergent Away-Step Conditional Gradient for Non-strongly Convex Functions”, talk in invited session in Topics in Continuous Optimization stream, Operations Research Society - Israel Conference 2015 (ORSIS 2015), Haifa (Israel), 2015.

“Robust Optimization Approach for Tracking under Bounded Uncertainty”, talk in invited session in Robust Optimization cluster, 21st International Symposium on Mathematical Programming (ISMP 2012), Berlin (Germany), 2012.

“Robust Optimization Approach for Tracking under Bounded Uncertainty”, talk in invited session in Challenges in Continuous Optimization cluster - Operations Research Society - Israel Conference 2012 (ORSIS 2012), Ma’ale Hahamisha (Israel), 2012.

Participation in organizing conferences

Invited session organizer:

ORSIS (Israeli OR society) annual conference, 2023, Tel-Aviv, Sessions: Continuous optimization, Naor (keynote) session.

ORSIS (Israeli OR society) annual conference, 2019, Shfaiim, Sessions: Continuous optimization, Naor (keynote) session.

ICCOPT (International Conference on Continuous Optimization), 2019, Berlin, Session: New advances in Robust Optimization.

ICCOPT (International Conference on Continuous Optimization), 2022, Bethlehem, Session: Optimization Under Uncertainty

Cluster/Stream Organizer

ORSIS (Israeli OR society) annual conference, 2018, Be’er Seva, Cluster: Continuous optimization.

IFORS (International Federation of Operations Research), 2020, Seoul, Stream: Robust and Data-Driven Optimization (canceled due to COVID-19).

SIOPT (SIAM Optimization) 2020, Hong-Kong, Mini-symposium co-organizer, Mini-symposium: Recent advances in robust optimization (canceled due to COVID-19).

SIOPT (SIAM Optimization) 2021, WA, USA, Mini-symposium co-organizer, Mini-symposium: Recent advances in optimization under uncertainty.

Organizing committee:

ORSIS, 2020. (canceled due to COVID-19).

One-day symposium on Optimization and Data Science in memory of Prof. Uriel Rothblum, 2020, Technion (canceled due to COVID-19).

Head of organizing committee: ORSIS, Aug 2021, Haifa (Israel).

Co-organizer of workshop on “Optimization in the Second Level” on bilevel and robust optimization and the connections between them, The Centre International de Rencontres Mathématiques (CIRM), Marseille, France, April 2-5, 2024. <https://conferences.cirm-math.fr/3031.html>

Program Committee, ICCOPT (International Conference on Continuous Optimization), 2025.