Roie Levin

Rutgers University
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Employment

Rutgers University, Department of Computer Science
Assistant Professor.
2024 - Present.

Tel Aviv University, Department of Statistics and Operations Research
Fulbright Postdoctoral Fellow.
Hosted by Prof. Niv Buchbinder.
2022 - 2023.

Education

Carnegie Mellon University, Computer Science Department
Ph.D. in Algorithms, Combinatorics, and Optimization (ACO).
Advised by Prof. Anupam Gupta.
Research Areas: Approximation, online, and streaming algorithms, especially for submodular optimization.
2017 - 2022.

Brown University
B.S. in Applied Math/Computer Science and *B.S. in Math.*
2011 - 2015.

Publications

Refereed Papers
(∗) denotes alphabetical author order.

Competitive Bundle Trading
In Submission.
(∗) Yossi Azar, Niv Buchbinder, **Roie Levin**, and Or Vardi.

Stochastic Caching via Subset Entropy
In Submission.
(∗) Ravi Kumar, **Roie Levin**, Debmalya Panigrahi, and Joseph (Seffi) Naor.

Competitively Consistent Clustering
ICML 2025.
(∗) Niv Buchbinder, **Roie Levin**, and Yue Yang.

Pairwise Independent Contention Resolution
IPCO 2024. Math Programming Special Issue.
(∗) Anupam Gupta, Jinqiao Hu, Gregory Kehne, and **Roie Levin**.

Set Covering with Our Eyes Wide Shut
SODA 2024.
(∗) Anupam Gupta, Gregory Kehne, and **Roie Levin**.

Chasing Positive Bodies
FOCS 2023.
(∗) Sayan Bhattacharya, Niv Buchbinder, **Roie Levin**, Thatchaphol Saranurak.

Competitive Algorithms for Block-Aware Caching
SPAA 2022.
(∗) Christian Coester, **Roie Levin**, Joseph (Seffi) Naor, and Ohad Talmon.

Random Order Set Cover is as Easy as Offline
FOCS 2021.
(∗) Anupam Gupta, Gregory Kehne, and **Roie Levin**.

Streaming Submodular Matching Meets the Primal-Dual Method
SODA 2021. Invited talk at Highlights of Algorithms 2021.
(∗) **Roie Levin** and David Wajc.

Fully-Dynamic Submodular Cover with Bounded Recourse
FOCS 2020.
(∗) Anupam Gupta and **Roie Levin**.

Finding Skewed Subcubes Under a Distribution
ITCS 2020.
(∗) Parikshit Gopalan, **Roie Levin**, and Udi Wieder.

The Online Submodular Cover Problem
SODA 2020.
(∗) Anupam Gupta and **Roie Levin**.

Robust Subspace Approximation in a Stream
NeurIPS 2018. Selected for spotlight presentation ($\sim 3\%$ of submitted papers).
Roie Levin, Anish Sevekari and David Woodruff.

Beyond Sentential Semantic Parsing: Tackling the Math SAT with a Cascade of Tree Transducers
EMNLP 2017.
Mark Hopkins, Cristian Petrescu-Prahova, **Roie Levin**, Ronan Le Bras, Alvaro Herrasti, and Vidur Joshi.

FigureSeer: Parsing Result-Figures in Research Papers
ECCV 2016.
Noah Siegel, Zachary Horvitz, **Roie Levin**, Santosh Kumar Divvala, and Ali Farhadi.

Unpublished

PTAS for MAP Assignment on Pairwise Markov Random Fields in Planar Graphs
arXiv 1504.01311.
(∗) Eli Fox-Epstein, **Roie Levin** and David Meierfrankenfeld.

Research Visits

University of Washington
Seattle, Washington, August 2022.

Hausdorff Research Institute for Mathematics
Trimester Program on Discrete Optimization - Bonn, Germany, Fall 2021.

Technion - Israel Institute of Technology
Host: Prof. Joseph (Seffi) Naor - Haifa, Israel, Summer 2021.

VMware Research Internship
Hosts: Dr. Parikshit Gopalan and Dr. Udi Wieder - Palo Alto, CA, Summer 2019.

Awards

Rutgers Open and Affordable Textbook Award, 2025-2026.

Fulbright Postdoctoral Fellowship, 2022-2023.

Israel Academy of Sciences and Humanities (IASH) Excellence Fellowship Program for International Postdoctoral Researchers, 2022 (regretfully declined).

NSF Graduate Research Fellowship Program – Honorable Mention, 2019.

CMU CSD Pradeep Sindhu Fellowship, 2019.

Brown University Senior Prize in Computer Science, 2015.
Awarded for academic excellence and service to the department.

International High School of San Francisco Valedictorian, 2011.

Teaching

Rutgers University
Intructor - Design and Analysis of Computer Algorithms (CS 344). Spring 2025.
Intructor - Design and Analysis of Data Structures and Algorithms (CS 513). Fall 2024.
Carnegie Mellon University
Teaching Assistant - Undergraduate Complexity (15-455). Fall 2020.
Teaching Assistant - Graduate Algorithms (15-750). Spring 2020.
Brown University
Head Teaching Assistant - Models of Computation (CSCI 0510). Fall 2014.
Teaching Assistant - Models of Computation (CSCI 0510). Fall 2013.
Teaching Assistant - Accelerated Intro to CS (CSCI 0190). Fall 2012.
Teaching Assistant - Writing and Speaking French I (FREN 0500). Fall 2014, Spring 2015.

Advising

PhD: Jiawei Yu (2025-Present).
Master: Yue Yang (2024-2025).
Bachelor: Joseph Koutsoutis (2024-2025), Jesse Lerner (2024-2025).

Service

Program Committees: APPROX 2024, ESA 2025.
Conference Reviews: FOCS 20[21,25], STOC 20[21-25], SODA 20[23-24], SOSA 2022, STACS 2023, APPROX 20[21,23], ISIT 2021, ICALP 20[21-25], IPCO 20[21-22,24], ITCS 2024, ESA 20[18-21,23-24], SWAT 2022, ACDA 2025, WAOA 2024.
Journal Reviews: SICOMP, Mathematical Programming, IPL, JAIR, INFORMS Journal on Computing, Algorithmica.
Rutgers PhD Admission Committee.
Rutgers Theory Lunch Organizer. Fall 2024 - Spring 2025.

CMU Theory Lunch Organizer. Spring 2018 - Fall 2018.
Graduate Student Mentor. Fall 2018.

Other Positions

The Allen Institute for Artificial Intelligence
Research Engineer/Predoctoral Fellow - Project Euclid, under Prof. Mark Hopkins. August 2015 - May 2017.

Brown University
Undergraduate Research Assistant - with Prof. Paul Valiant. Summer 2014.

Menta Capital
Research Intern - Summer 2013.

Talks

Chasing Positive Bodies, Google Research Algorithms Seminar, October 2024.
Chasing Positive Bodies, UT Austin Theory Seminar, April 2024.
Chasing Positive Bodies, Johns Hopkins Algorithms and Complexity Seminar, February 2024.
Chasing Positive Bodies, Brown Theory Seminar, January 2024.
Chasing Positive Bodies, Rutgers/DIMACS Theory of Computing Seminar, January 2024.
Chasing Positive Bodies, FOCS 2023.
Decision Making Under Uncertainty, Fulbright Post-Doctoral Seminar, July 2023.
Chasing Positive Bodies, Bar-Ilan University Theory Seminar, May 2023.
Optimization When You Don't Know the Future, Computer Science Department Colloquium, Rutgers University, April 2023.
Online Covering: Secretaries, Prophets and Universal Maps, Google Research Algorithms Seminar, February 2023.
Online Covering: Secretaries, Prophets and Universal Maps, MIT Algorithms and Complexity Seminar, February 2023.
Online Covering: Secretaries, Prophets and Universal Maps, NYU Theory Seminar, February 2023.
Online Covering: Secretaries, Prophets and Universal Maps, Algorithms Under Uncertainty Workshop at FSTTCS 2022, Chennai, India.
Algorithms Under Uncertainty, Fulbright Post-Doctoral Seminar, December 2022.
Online Covering: Secretaries, Prophets and Universal Maps, Tel Aviv University Algorithms Seminar, December 2022.

Competitive Algorithms for Block-Aware Caching, SPAA 2022.
Submodular Optimization Under Uncertainty, CMU, May 2022.
Random Order Set Cover is as Easy as Offline, CMU Theory Lunch, March 2022.
Random Order Set Cover is as Easy as Offline, FOCS 2021.
Random Order Set Cover is as Easy as Offline, Aalto University, Helsinki CS Theory Seminar, November 2021.
Random Order Set Cover is as Easy as Offline, HIM Trimester Program on Discrete Optimization, Workshop on Continuous Approaches to Discrete Optimization, October 2021.
Submodular Optimization Under Uncertainty, CMU, August 2021.
Streaming Submodular Matching Meets the Primal-Dual Method, HALG 2021.
Streaming Submodular Matching Meets the Primal-Dual Method, SODA 2021.
Online and Dynamic Algorithms for Submodular Cover, Google Research Algorithms Seminar, Dec 2020.
Fully-Dynamic Submodular Cover with Bounded Recourse, FOCS 2020.
Fully-Dynamic Submodular Cover with Bounded Recourse, CMU Theory Lunch, Oct 2020.
Finding Skewed Subcubes Under a Distribution, ITCS 2020.
Finding Skewed Subcubes Under a Distribution, VMWare Research, Aug 2019.
The Online Submodular Cover Problem, SODA 2020.
The Online Submodular Cover Problem, CMU Theory Lunch, Sep 2019.
The Online Submodular Cover Problem, VMWare Research, July 2019.
Robust Subspace Approximation in a Stream, Spotlight Presentation, NeurIPS 2018.

Languages

Fluent in English, Hebrew, French, and Mandarin.