

Arsen Vasilyan

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Research Interests

- Computational learning theory
 - Distribution learning and testing
 - Computational statistics
 - Sublinear algorithms
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Appointments

Simons Institute for Theory of Computation at UC Berkeley August 2024 - December 2024
Research Fellow

Programs: Modern Paradigms in Generalization, Large Language Models and Transformers

Massachusetts Institute of Technology (MIT) May 2024 - August 2024
Research Specialist

Advisor: Ronitt Rubinfeld

Education

Massachusetts Institute of Technology (MIT) June 2020 - March 2024

Ph.D. Candidate in Computer Science

Advisors: Jonathan Kelner, Ronitt Rubinfeld

Massachusetts Institute of Technology (MIT) September 2019 - June 2020

M.S. in Electrical Engineering and Computer Science

Thesis: *Approximating the Noise Sensitivity of a Monotone Boolean Function*

Advisor: Ronitt Rubinfeld

Massachusetts Institute of Technology (MIT) September 2016 - June 2019

B.S. in Computer Science

Minor in Physics / Minor in Philosophy

List of Publications

Note that author order in all publications below is alphabetical, following the standard conventional practice in theoretical computer science.

Tolerant Algorithms for Learning with Arbitrary Covariate Shift

Surbhi Goel, Abhishek Shetty, Konstantinos Stavropoulos, Arsen Vasilyan

Accepted to 38th Conference on Neural Information Processing Systems (**NeurIPS 2024**).

Spotlight.

Efficient Discrepancy Testing for Learning with Distribution Shift

G. Chandrasekaran, A. R. Klivans, Vasilis Kontonis, K. Stavropoulos, A. Vasilyan

Accepted to 38th Conference on Neural Information Processing Systems (**NeurIPS 2024**).

Plant-and-Steal: Truthful Fair Allocations via Predictions

Ilan Reuven Cohen, Alon Eden, Talya Eden, Arsen Vasilyan

Accepted to 38th Conference on Neural Information Processing Systems (**NeurIPS 2024**).

Learning Intersections of Halfspaces with Distribution Shift: Improved Algorithms and SQ Lower Bounds

Adam R. Klivans, Konstantinos Stavropoulos, Arsen Vasilyan

37th Annual Conference on Learning Theory (**COLT 2024**).

Testable Learning with Distribution Shift

Adam R. Klivans, Konstantinos Stavropoulos, Arsen Vasilyan

37th Annual Conference on Learning Theory (**COLT 2024**).

An Efficient Tester-Learner for Halfspaces

Aravind Gollakota, Adam R. Klivans, Konstantinos Stavropoulos, Arsen Vasilyan

12th International Conference on Learning Representations (**ICLR 2024**).

Tester-Learners for Halfspaces: Universal Algorithms

Aravind Gollakota, Adam R. Klivans, Konstantinos Stavropoulos, Arsen Vasilyan

37th Conference on Neural Information Processing Systems (**NeurIPS 2023**).

Accepted for oral presentation (top 2.1% of accepted papers).

Agnostic Proper Learning of Monotone Functions: Beyond the Black-box Correction Barrier

Jane Lange and Arsen Vasilyan

64th IEEE Symposium on Foundations of Computer Science (**FOCS 2023**).

Invited to special issue.

Testing Distributional Assumptions of Learning Algorithms

Ronitt Rubinfeld, Arsen Vasilyan

55th ACM Symposium on Theory of Computing (**STOC 2023**)

Properly Learning Monotone Functions via Local Reconstruction

Jane Lange, Ronitt Rubinfeld, Arsen Vasilyan

63rd IEEE Symposium on Foundations of Computer Science (**FOCS 2022**)

Monotone Probability Distributions over the Boolean Cube Can Be Learned with Sublinear Samples

Ronitt Rubinfeld, Arsen Vasilyan

11th Innovations in Theoretical Computer Science Conference (**ITCS 2020**)

Approximating the Noise Sensitivity of a Monotone Boolean Function

Ronitt Rubinfeld, Arsen Vasilyan

Approximation, Randomization, and Combinatorial Optimization. Algorithms and Techniques (**APPROX/RANDOM 2019**).

Preprints

Local Lipschitz Filters for Bounded-Range Functions

Jane Lange, Ephraim Linder, Sofya Raskhodnikova, Arsen Vasilyan

Preprint arXiv:2308.14716 (2023).

Invited Talks

- Sublinear Algorithms Program, Simons Institute at UC Berrkeley *May 2024*
 - Princeton Theory Seminar *February 2024*
 - Toyota Technological Institute at Chicago, Junior Theorists Workshop *December 2023*
 - Carnegie Melon University, Theory seminar *November 2023*
 - Bar-Ilan University, Theory seminar *June 2023*
 - Harvard-MIT Theory Reading Group (joint 3-hour talk with Ronitt Rubinfeld). *April 2023*
 - Carnegie Melon University, Theory seminar *October 2022*
 - Columbia University, Theory seminar *September 2022*
 - Stanford University *February 2022*
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Teaching experiences

Massachusetts Institute of Technology (MIT)

Teaching Assistant

- **6.875 [Graduate course] Cryptography and Cryptanalysis** *Fall 2019*
Developed homework assignments and held weekly office hours.
 - **6.UAR Advanced Undergraduate Research Program** *Spring 2023*
Trained advanced undergraduate students in computer science communication skills. Ensured their research projects are on track.
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Service

- **External referee**
ACM Symposium on Theory of Computing (**STOC**), Symposium on Foundations of Computer Science (**FOCS**), Innovations in Theoretical Computer Science (**ITCS**), Symposium on Discrete Algorithms (**SODA**), International Conference on Randomization and Computation (**RANDOM**), International Colloquium on Automata, Languages, and Programming (**ICALP**), European Symposium on Algorithms (**ESA**)
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Outreach

- **MIT Graduate Application Assistance Program (GAAP)** *2021 - 2023*
Mentored 1:1 underrepresented applicants to computer science program at MIT. Held meetings through the graduate application process, meeting periodically with applicants all the way up to the deadline.
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Awards

- **Second Place – William A. Martin Master’s Thesis Award** Cambridge, Massachusetts
August 2021
- **Silver Medal – International Physics Olympiad** Astana, Kazakhstan
July 2014