

Arsen Vasilyan
Austin, Texas
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Research Interests

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

University of Texas at Austin January 2025 - Present
Postdoctoral Fellow
Advisor: Adam Klivans

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. in Computer Science
Thesis Title: Enhancing Learning Algorithms via Sublinear-Time Methods
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 2015 - 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.

Learning Constant-Depth Circuits in Malicious Noise Models

Adam R. Klivans, Konstantinos Stavropoulos, Arsen Vasilyan

38th Annual Conference on Learning Theory (**COLT 2025**, accepted).

Local Lipschitz Filters for Bounded-Range Functions

Jane Lange, Ephraim Linder, Sofya Raskhodnikova, Arsen Vasilyan

36th ACM-SIAM Symposium on Discrete Algorithms (**SODA 2025**).

Tolerant Algorithms for Learning with Arbitrary Covariate Shift

Surbhi Goel, Abhishek Shetty, Konstantinos Stavropoulos, Arsen Vasilyan

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

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

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**).

Journal Articles

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

Jane Lange and Arsen Vasilyan

SIAM Journal on Computing, 2025.

Preprints

Robust Learning of Halfspaces under Log-Concave Marginals

Jane Lange, Arsen Vasilyan

Preprint arXiv:2505.13708 (2025).

The Power of Iterative Filtering for Supervised Learning with (Heavy) Contamination

Adam R. Klivans, Konstantinos Stavropoulos, Kevin Tian, Arsen Vasilyan

Preprint arXiv:2505.20177 (2025).

Testing Noise Assumptions of Learning Algorithms

Surbhi Goel, Adam R. Klivans, Konstantinos Stavropoulos, Arsen Vasilyan

Preprint arXiv:2501.09189 (2025).

Invited Talks

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| • IFML Seminar, University of Texas at Austin | <i>January 2025</i> |
| • Joint IFML/MPG Symposium, Simons Institute at UC Berrkeley | <i>November 2024</i> |
| • University of Michigan Theory Seminar | <i>October 2024</i> |
| • Sublinear Algorithms Program, Simons Institute at UC Berrkeley | <i>May 2024</i> |
| • Princeton Theory Seminar | <i>February 2024</i> |
| • Toyota Technological Institute at Chicago, Junior Theorists Workshop | <i>December 2023</i> |
| • Carnegie Mellon University, Theory seminar | <i>November 2023</i> |

- Bar-Ilan University, Theory seminar *June 2023*
 - Harvard-MIT Theory Reading Group (joint 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

Massachusetts Institute of Technology (MIT)

Teaching Assistant

- **6.UAR Advanced Undergraduate Research Program** *Spring 2023*
Trained advanced undergraduate students in computer science communication skills. Ensured their research projects are on track.
 - **6.875 [Graduate course] Cryptography and Cryptanalysis** *Fall 2019*
Developed homework assignments and held weekly office hours.
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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**), The International Conference on Learning Representations (**ICLR**), Conference on Learning Theory (**COLT**), Conference on Neural Information Processing Systems (**NeurIPS**)
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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

- **Dimitris N. Chorafas Foundation Award** *Vitznau, Switzerland
September 2024*
- **Second Place – William A. Martin Master's Thesis Award** *Cambridge, Massachusetts
August 2021*
- **Silver Medal – International Physics Olympiad** *Astana, Kazakhstan
July 2014*