Arsen Vasilyan

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Research Interests

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

Education

Massachusetts Institute of Technology (MIT) June 2020 - present
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

Relevant coursework: *Advanced Algorithms, Algorithmist's Toolkit, Inference and Information, Algorithms for Inference, Information theory in Computer Science, Computational Geometry, Randomness and Computation, Fine-grained Computation, Cryptography and Cryptanalysis, Learning with Errors and Post-Quantum Cryptography, Quantum physics I, II, Statistical physics I, General relativity, Algebraic Combinatorics, Elliptic Curves, Intro to Algebraic Geometry*

Publications

Tester-Learners for Halfspaces: Universal Algorithms
Aravind Gollakota, Adam R. Klivans, Konstantinos Stavropoulos, Arsen Vasilyan
37th Conference on Neural Information Processing Systems (**NeurIPS 2023**, to appear).
Accepted for oral presentation.

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**, to appear).
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

An Efficient Tester-Learner for Halfspaces
Aravind Gollakota, Adam R. Klivans, Konstantinos Stavropoulos, Arsen Vasilyan
Preprint arXiv:2302.14853 (2023).

Local Lipschitz Filters for Bounded-Range Functions
Jane Lange, Ephraim Linder, Sofya Raskhodnikova, Arsen Vasilyan
Preprint arXiv:2308.14716 (2023).

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.

Service

- **External referee**
  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**)

Service and 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.

Awards

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