Ishaq Aden-Ali

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EDUCATION

University of California, Berkeley, Berkeley, CA
P.hD Student, Computer Science — Aug 2021 - May 2026
Supervisors: Peter Bartlett and Jelani Nelson

McMaster University, Hamilton, ON
M.Sc, Computer Science — Sept 2019 - July 2021
B.Eng, Electrical Engineering — Sept 2014 - April 2019

INTERESTS

Large language models, learning theory, high dimensional probability, theoretical computer science.

PAPERS

$\star$ *denotes equal contribution. Papers without* $\star$ *list authors alphabetically.*

Ishaq Aden-Ali*, Noah Golowich*, Allen Liu*, Abihshek Shetty*, Ankur Moitra, Nika Haghtalab. Subliminal Effects in Your Data: A General Mechanism via Log-Linearity. *Preprint.*

Ishaq Aden-Ali, Hakan Ferhatosmanoglu, Alexander Greaves-Tunnell, Nina Mishra, Tal Wagner. Quantization for Vector Search under Streaming Updates. *Preprint.*

Ishaq Aden-Ali. On the Injective Norm of Sums of Random Tensors and the Moments of Gaussian Chaoses. *Preprint.*

Ishaq Aden-Ali, Mikael Møller Høgsgaard, Kasper Green Larsen, Nikita Zhivotovskiy. Majority-of-Three: An Optimal Learner? *COLT 2024.*

Ishaq Aden-Ali, Yeshwanth Cherapanamjeri, Abhishek Shetty, Nikita Zhivotovskiy. Optimal PAC Bounds without Uniform Convergence. *FOCS 2023.*

Ishaq Aden-Ali, Yeshwanth Cherapanamjeri, Abhishek Shetty, Nikita Zhivotovskiy. The One-Inclusion Graph Algorithm is not Always Optimal. *COLT 2023.*

Ishaq Aden-Ali, Yanjun Han, Jelani Nelson, Huacheng Yu. On the Amortized Complexity of Approximate Counting. *RANDOM 2024.*

Ishaq Aden-Ali, Hassan Ashtiani, Christopher Liaw. Privately Learning Mixtures of Axis-Aligned Gaussians. *NeuRIPS 2021.*

Ishaq Aden-Ali, Hassan Ashtiani, Gautam Kamath. On the Sample Complexity of Privately Learning High-Dimensional Unbounded Gaussians. *ALT 2021.*

Ishaq Aden-Ali, Hassan Ashtiani. On the Sample Complexity of Learning Sum-Product Networks. *AISTATS 2020.*

WORK EXPERIENCE

Amazon Web Services, East Palo Alto — Aug 2023 - Dec 2023
Applied Science Intern

- Worked on vector quantization algorithms that are updateable on a stream. I introduced a new mixed memory model of computation to this area and developed fast and practical algorithms that improve the SOTA. Paper under submission.
- Designed large scale experiments to evaluate the performance of our algorithm.

Uinveristy of California, Berkeley Aug 2023 - Dec 2023
Graduate Student Instructor, EECS Department

- Held office hours and ran discussion sessions weekly for the course "Efficient Algorithms and Intractable Problems" (CS 170).
- Contributed to creation of midterm and final exam questions.

McMaster University Jan 2020 - April 2020
Teaching Assistant, Department of Computing and Software

- Ran weekly tutorials for an introductory machine learning course (CS 4ML3).
- Contributed to creating both theory and coding problems for the assignments.

McMaster University May 2017 - April 2019
Teaching Assistant, Department of Mathematics

- Worked in the math help centre, a free drop in space open to all students seeking help in introductory math courses (calculus, probability, statistics and linear algebra).
- Led weekly tutorials for an introductory calculus course and ran drop in lab sessions to help students with MATLAB assignments.

ON Semiconductor Jan 2018 - April 2018
Hardware and System Engineering Intern, Hardware Team

- I was responsible for writing, testing and debugging a large number of public firmware applications for the RSL10 embedded system in the C programming language.

TALKS

On the Injective Norm of Sums of Random Tensors and the Moments of Gaussian Chaoses.

Michigan State University, East Lansing, Michigan.	October 2, 2025
Aarhus University, Aarhus, Denmark.	June 26, 2025
University of California, Irvine.	February 25, 2025

Optimal PAC Bounds without Uniform Convergence.

University of Michigan, Ann Arbor, Michigan	January 17, 2025
University of Chicago (Combinatorics and TCS seminar).	February 25, 2025
MBZUAI, Abu Dhabi, UAE.	January 23 2024
UC Berkeley, Berkeley, California.	September 20 2023
Stanford University, Stanford, California.	September 28 2023
University of Waterloo, Waterloo, Ontario.	July 5 2023
McMaster University, Hamilton, Ontario.	June 22 2023
University of Washington, Seattle, Washington.	May 12 2023

The One-Inclusion Graph Algorithm is not Always Optimal

Aarhus University, Aarhus, Denmark.	March 14 2023
Google Research, Mountainview, California.	January 18 2023

SOFTWARE

Languages: Python, C, Matlab.
Frameworks: Pytorch.

Last updated: February 5, 2026.