Neekon Vafa

Website: neekonvafa.com

Education Massachusetts Institute of Technology, 2020-present

- Ph.D. Candidate in Mathematics. Advisor: Vinod Vaikuntanathan.
- Cumulative GPA: 5.00 (on a 5.0 scale).

Harvard University, 2015-2019

- B.A. (honors) in Mathematics with a secondary in Computer Science.
- Cumulative GPA: 4.00 (on a 4.0 scale).

Papers

- Mathialagan, S., **Vafa**, **N.** MacORAMa: Optimal Oblivious RAM with Integrity. [ePrint; Accepted to CRYPTO 2023]
 - Gupte, A., Vafa, N., Vaikuntanathan, V. Continuous LWE is as Hard as LWE & Applications to Learning Gaussian Mixtures. [arXiv, ePrint, FOCS 2023]
 - Chen, L., Hirahara, S., Vafa, N. Average-case Hardness of NP and PH from Worst-case Fine-grained Assumptions. In 13th Innovations in Theoretical Computer Science Conference (ITCS 2022). [ECCC, ITCS]
 - Allender, E., Ilango, R., Vafa, N. The Non-hardness of Approximating Circuit Size. *Theory Comput Syst* (2020) [ECCC, CSR, Special Issue: TOCS]
 - DeHority, S., Gonzalez, X., Vafa, N. et al. Moonshine for All Finite Groups. Res Math Sci 5, 14 (2018) [arXiv, RMS]

Fellowships NSF Graduate Research Fellowship, National Science Foundation, 2020-2025

& Awards • Awarded full funding for 3 out of 5 fellowship years for my Ph.D. research.

Reitano Fellowship, Massachusetts Institute of Technology, 2020-2021

• Awarded first-year full funding in honor of Professor Gilbert Strang by the Reitano Family.

Bok Center Certificate of Distinction in Teaching, Harvard University, 2018

• Awarded for high instructor ratings (4.8/5.0) as course assistant for Math 122 (abstract algebra).

John Harvard Scholar, Harvard University, 2016, 2017, and 2018

• Awarded annually to freshmen, sophomores, and juniors in top 5% of respective classes.

Detur Book Prize, Harvard University, 2016

• Awarded to students with highest first-year academic standings.

Visits &	• Research Intern at NTT Research (Summer 2023).
Travels	• Visited Aayush Jain at CMU (April 2023).
	• Visiting Student Researcher at "Meta-Complexity" program at Simons Institute (January 2023).
	• Visiting Student Researcher at "Lattices and Beyond" program at Simons Institute (June 2022).
Talks	• Columbia: Theory Seminar (April 2023)

• CMU: Theory Lunch Seminar (April 2023) [Video]

- Simons Institute: Lower Bounds, Learning, Average-Case Complexity Workshop (Feb. 2023) [Video]
- UC Berkeley: Security Seminar (February 2023)
- Stanford: Security Seminar (January 2023)
- MIT: Cryptography and Information Security (CIS) Seminar (December 2022)
- FOCS 2022 (November 2022) [Video]
- Simons Institute: Quantum and Lattices Joint Reunion Workshop (June 2022) [Video]
- ITCS 2022 (January 2022) [Video]
- Joint Math Meetings 2018 (January 2018)

Reviewing • RANDOM 2023, CCC 2023, SODA 2023, TCC 2022, TCC 2021, EUROCRYPT 2021

Selected Massachusetts Institute of Technology (Graduate Level*)

- Coursework Quantum Complexity Theory* (Spring 2022)
 - An Algorithmist's Toolkit* (Spring 2022)
 - Matrix Multiplication and Graph Algorithms* (Fall 2021)
 - Randomized Algorithms* (Spring 2021)
 - Analysis of Boolean Functions* (Spring 2021)
 - Cryptography & Cryptanalysis* (Fall 2020)
 - Quantum Computation* (Fall 2020)
 - Fine-Grained Algorithms and Complexity (Spring 2018)
 - Advanced Complexity Theory^{*} (Fall 2017)

Harvard University (Graduate Level*)

- Information Theory in Theoretical Computer Science* (Spring 2019)
- Systems Programming and Machine Organization (Fall 2018)
- Economics and Computation (Fall 2018)
- Data Structures and Algorithms (Spring 2018)
- Algebraic Topology* (Fall 2017)
- Machine Learning (Spring 2017)
- Algebraic Geometry (Spring 2017)
- Combinatorics (Spring 2017)
- Probability (Fall 2016)

Teaching Course Assistant for Math 122, Harvard University, Fall 2017

Primary instructor: Hiro Lee Tanaka

- Held twice-weekly office hours and graded problem sets for abstract algebra course.
- Awarded Bok Center Certificate of Distinction in Teaching for high instructor ratings.

Volunteer Computer Programming Teacher at Boston Public Schools, 2016-2017

- Seventh grade at Gardner Pilot Academy (Fall 2016).
- Fourth grade at Henderson Inclusion School (Spring 2017).

IndustryNTT Research, Sunnyvale, CA, Summer 2023ExperienceResearch Intern (Cryptography & Information Security Laboratories)

Google (YouTube), San Bruno, CA, September 2019-July 2020 Software Engineer

• Supported YouTube Music's [Web, iOS, Android] server-side stack as part of the Playback team.

Jane Street Capital, New York, NY, Winter 2017 Quantitative Trading Intern

Facebook, Menlo Park, CA, Summer 2016

Facebook University for Engineering Intern

- Designed and implemented Android app with two other interns.
- App scans food-product barcodes to indicate if it's safe to eat based on user's dietary restrictions.

LanguagesEnglish (native), Farsi (bilingual), Spanish (proficient), French (elementary).SkillsC++, Python, Java, Android, OCaml, SageMath, Mathematica, IATEX.InterestsCurling, Tennis, Filmmaking, Travel, Piano, Clarinet.