

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).

Publications

- Mathialagan, S., **Vafa, N.** MacORAMA: Optimal Oblivious RAM with Integrity. [[ePrint](#)]
- Gupte, A., **Vafa, N.**, Vaikuntanathan, V. Continuous LWE is as Hard as LWE & Applications to Learning Gaussian Mixtures. [Accepted to [FOCS 2022](#); [arXiv](#), [ePrint](#)]
- 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 & Awards **NSF Graduate Research Fellowship**, National Science Foundation, 2020-2025

- 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.

Academic Activities

- Visiting Student Researcher at “[Meta-Complexity](#)” program at [Simons Institute](#) (January 2023).
- Gave talk at MIT’s [Cryptography and Information Security \(CIS\) Seminar](#) (December 2022).
- Gave talk at [FOCS 2022](#) (November 2022).
- Visiting Student Researcher at “[Lattices and Beyond](#)” program at [Simons Institute](#) (June 2022)
- Gave talk at “[Quantum and Lattices Joint Reunion Workshop](#)” at [Simons Institute](#) (June 2022).
- Gave talk at [ITCS 2022](#) (January 2022).
- Reviewer for [SODA 2023](#), [TCC 2022](#), [TCC 2021](#), [EUROCRYPT 2021](#).
- Gave talk at [Joint Math Meetings 2018](#) (January 2018).

Selected Coursework	<p>Massachusetts Institute of Technology (Graduate Level*)</p> <ul style="list-style-type: none"> • Quantum Complexity Theory* (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) <p>Harvard University (Graduate Level*)</p> <ul style="list-style-type: none"> • 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	<p>Course Assistant for Math 122, Harvard University, Fall 2017 Primary instructor: Hiro Lee Tanaka</p> <ul style="list-style-type: none"> • 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. <p>Volunteer Computer Programming Teacher at Boston Public Schools, 2016-2017</p> <ul style="list-style-type: none"> • Seventh grade at Gardner Pilot Academy (Fall 2016). • Fourth grade at Henderson Inclusion School (Spring 2017).
Industry Experience	<p>Google (YouTube), San Bruno, CA, September 2019-July 2020 <i>Software Engineer</i></p> <ul style="list-style-type: none"> • Supported YouTube Music's [Web, iOS, Android] server-side stack as part of the Playback team. <p>Jane Street Capital, New York, NY, Winter 2017 <i>Quantitative Trading Intern</i></p> <p>Facebook, Menlo Park, CA, Summer 2016 <i>Facebook University for Engineering Intern</i></p> <ul style="list-style-type: none"> • 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.
Languages Skills Interests	<p>English (native), Farsi (bilingual), Spanish (proficient), French (elementary). C++, Python, Java, Android, OCaml, SageMath, Mathematica, L^AT_EX. Curling, Tennis, Filmmaking, Travel, Piano, Clarinet.</p>