

Shashwat Silas

344 Bryant Street, Mountain View. shashwat@alumni.stanford.edu. 650-575-3785

Education	PhD in Computer Science, 2016-2021 Stanford University Advised by Prof. Mary Wootters
	MPhil in Computer Science, Distinction, 2016 University of Cambridge
	ScB in Mathematics, Magna cum laude, 2015 Brown University
Professional experience	Software Engineer, Google LLC, April 2021 - Present Designing and implementing improved error correction algorithms for the next generation of Google SSDs. Research towards improving SSD reliability and performance.
	Research intern, Google LLC, June 2020 - September 2020 Hosted by Narges Shahidi. Designed a reinforcement learning based algorithm for reducing write-amplification in NAND flash SSD and conducted simulations. Developed statistical methods for optimizing decoding algorithms for LDPC codes used in SSD.
	Visiting researcher, University of Haifa, October 2018 - December 2018 Hosted by Noga Ron-Zewi. Collaboration resulted in the first explicit construction of list-decoding capacity achieving codes which have deterministic nearly-linear time decoding algorithms.
Selected Awards	<ul style="list-style-type: none">• Google Graduate Fellowship in Computer Science 2017-2020. Stanford University.• Google Prize for Best MPhil Thesis 2016. Cambridge Computer Laboratory.• College Scholarship Prize 2016. St John's College, Cambridge.• Benefactor's Scholarship for Research 2015-16. St John's College, Cambridge.• A.A. Bennett Award for Mathematics 2015. Brown University.• Phi Beta Kappa. Brown University.

Research

10. Real-time oblivious erasure correction with linear time decoding and constant feedback. Shashwat Silas. *ISIT 2021*. **Finalist for the IEEE Jack Keil Wolf student paper award.**
9. Sharp threshold rates for random codes. Venkat Guruswami, Jonathan Moshieff, Nicolas Resch, Shashwat Silas, Mary Wootters. *ITCS 2021*.
8. Flash translation layer design using reinforcement learning. Shashwat Silas, Narges Shahidi, Tao Gong and Ricky Benitez. *Patent pending, Google LLC, 2020*.
7. Bounds for list-decoding and list-recovery of random linear codes. Venkat Guruswami, Ray Li, Jonathan Moshieff, Nicolas Resch, Shashwat Silas, Mary Wootters. *RANDOM 2020*.
6. LDPC codes achieve list decoding capacity. Jonathan Moshieff, Nicolas Resch, Noga Ron-Zewi, Shashwat Silas, Mary Wootters. *FOCS 2020*. **Invited to SICOMP special issue for best papers at FOCS 2020.**
5. On list recovery of high-rate tensor codes. Swastik Kopparty, Nicolas Resch, Noga Ron-Zewi, Shubhangi Saraf, Shashwat Silas. *IEEE Transactions on Information Theory and RANDOM 2019*.
4. Load-balanced fractional repetition codes. Alexandra Porter, Shashwat Silas, Mary Wootters. *ISIT 2018*.
3. Weak compression and (in)security of rational proofs of storage. Ben Fisch, Shashwat Silas. *IACR ePrint 2018*. (*Manuscript*)
2. Δ -connectivity in random lifts of graphs. Shashwat Silas. *Electronic Journal of Combinatorics 2017*.
1. Dedekind sums $s(a, b)$ and inversions modulo b . Yiwang Chen, Nicholas Dunn, Campbell Hewett and Shashwat Silas. *International Journal of Number Theory 2015*.

Theses

2. PhD Thesis: Threshold rates for error correcting codes. Shashwat Silas. *Stanford University 2021*.
1. MPhil Thesis: Algebraic techniques for random covering graphs. Shashwat Silas. *University of Cambridge 2016*. **Winner of the best thesis award 2016.**

Skills

Proficient in Python, C, R, Latex. Experience in C++, OCaml, Unix, Scala, Rust, Java.

Teaching

Course Assistant, Stanford University

CS 265/CME 309: Randomized Algorithms and Probabilistic Analysis, Autumn 2019
CS 161: Design and Analysis of Algorithms, Winter 2019 and Summer 2019

Head Teaching Assistant, Brown University

CSCI 1570: Design and Analysis of Algorithms, Fall 2014

CSCI 1550: Randomized Algorithms and Probabilistic Analysis, Spring 2014 and Spring 2015

Teaching Assistant, Brown University

CSCI 1450: Probability and Computing, Fall 2013

MATH 0540: Honors Linear Algebra, Fall 2013

CSCI 0220: Discrete Math, Spring 2013

MATH 1540: Galois Theory and Representation Theory, Spring 2015

Service

Stanford University Computer Science Theory Seminar. Coordinator, 2017-2018.

Stanford Wine Society. President, 2020-2021. Logistics Manager, 2017-2020.

Reviewer for *RANDOM 2020*, *ESA 2015*, *FOCS 2020*, *ISIT 2021*, *IEEE Transactions on Information Theory 2020*.

Brown University Math Department Undergraduate Group. Co-President, 2012–2015.