

CURRICULUM VITAE
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1 Education

MASSACHUSETTS INSTITUTE OF TECHNOLOGY, Cambridge, MA.

Ph.D., Computer Science August 2001
Dissertation: List Decoding of Error-Correcting Codes
Winner, ACM Doctoral Dissertation Award, 2002.
Advisor: Prof. **Madhu Sudan**

Master of Science, Computer Science May 1999
Thesis: Query-efficient Checking of Proofs and Improved PCP Characterizations of NP.

INDIAN INSTITUTE OF TECHNOLOGY, MADRAS (Chennai, India)

Bachelor of Technology (B.Tech), Computer Science and Engineering June 1997

Postdoctoral fellowship

MILLER RESEARCH FELLOW Sept 2001 - Aug 2002
Miller Institute for Basic Research in Science
University of California, Berkeley, CA.

2 Employment

University of California, Berkeley Jan 2022-present

- CHANCELLOR'S PROFESSOR of Electrical Engineering and Computer Science
- SENIOR SCIENTIST, Simons Institute for the Theory of Computing
- INTERIM DIRECTOR, Simons Institute for the Theory of Computing, Sep 2024-present
- PROFESSOR, Department of Mathematics

Computer Science Department
Carnegie Mellon University, Pittsburgh, PA.

- DIRECTOR OF PH.D. PROGRAM June 2019 - Dec 2021
- PROFESSOR July 2014 - Dec 2021
- ASSOCIATE PROFESSOR July 2009 - June 2014
- VISITING ASSOCIATE PROFESSOR Sept 2008 - June 2009

VISITING RESEARCHER March-May 2018
Center for Mathematical Sciences and Applications, Harvard University.

VISITNG PROFESSOR July 2017-Feb 2018
School of Physical & Mathematical Sciences, Nanyang Technological University, Singapore.

VISITING RESEARCHER January-June 2014
Microsoft Research New England.

MEMBER, SCHOOL OF MATHEMATICS
Institute for Advanced Study, Princeton, NJ.

Sept 2007 - May 2008

Department of Computer Science and Engineering
University of Washington, Seattle, WA.

- ASSOCIATE PROFESSOR (on leave)
- ASSISTANT PROFESSOR

Sept 2007 - June 2009

Sept 2002 - Sept 2007

3 Research Interests

I am broadly interested in Algorithms, Computational Complexity, Coding/Information Theory, and related mathematics. Specific areas of interest include error-correcting codes, approximation algorithms and hardness of approximation, probabilistically checkable proofs, pseudorandomness and explicit combinatorial constructions, fine-grained complexity, computational and communication complexity, and streaming and sub-linear computation.

4 Memberships

Fellow of the Association for Computing Machinery (ACM), Institute of Electrical and Electronics Engineers (IEEE), and the American Mathematical Society (AMS).

5 Honors and Awards

Best Paper Award, ACM Symposium on Theory of Computing (STOC), 2024.

Guggenheim Fellowship, 2023.

Distinguished Alumnus Award, Indian Institute of Technology Madras, 2023.

American Mathematical Society (AMS) Fellow, 2023.

Chancellor's Professor, Department of EECS, UC Berkeley, 2022-present.

Simons Investigator, 2020.

IEEE Fellow, 2019.

Association for Computing Machinery (ACM) Fellow, 2017.

EATCS Presburger Award, 2012.

Invited speaker, International Congress of Mathematicians, August 2010.

Best paper award (joint with C. Umans and S. Vadhan), Computational Complexity Conference, 2007.

David and Lucile Packard Fellowship for Science and Engineering, 2005. (One out of 16 fellows.)

Alfred P. Sloan Foundation Fellow, 2005.

Work on algebraic error-correction featured by the National Science Foundation in its “Discoveries” section. Original article, dated August 11, 2004, available at:
http://nsf.gov/discoveries/disc_summ.jsp?cntn_id=100256&org=NSF.

NSF Faculty Early Career Development (CAREER) Award, 2004.

Association for Computing Machinery (ACM) Doctoral Dissertation Award, 2002, for best doctoral thesis in Computer Science and Engineering.

George M. Sprowls Award, MIT, 2002, for best Ph.D thesis submitted to the Department of Electrical Engineering and Computer Science, MIT.

Miller Research Fellowship, 2001.

IEEE Information Theory Society Paper Award (joint with Madhu Sudan), 2000.

IBM Graduate Research Fellowship, 1999-2001.

AT&T Leadership Award, 1997

2nd position in the All India Joint Entrance Examination, 1993, for admissions into the Indian Institutes of Technology (IITs).

1st position, National Maths Talent Test (conducted by the Association of Mathematics Teachers of India), 1993.

3rd position, Indian National Mathematical Olympiad, 1992.

National Board for Higher Mathematics (NBHM) scholarship, India, 1993-97.

National Talent Search Scholar, India, 1991.

6 Professional activities

- *Editor-in-Chief*, Journal of the ACM, November 2021-present.
- Vice Chair, IEEE Technical Committee on Mathematical Foundations of Computing (TCMF), Jan 2022-Dec 2023.
- Simons Institute Scientific Advisory Board, Feb 2020-Dec 2021.
- **President**, Computational Complexity Foundation, June 2018-July 2021.
- ArXiv moderator, cs.IT, April 2018-present.
- *Editor-in-Chief*, ACM Transactions on Computation Theory, 2017-2019.
- Conference Program Committee Chair (Technical)
 - 15th Innovations in Theoretical Computer Science (ITCS) conference, 2024.
 - 41st IARCS Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS, Track A), 2022.
 - 2018 IEEE International Symposium on Information Theory (ISIT, co-chair)
 - 56th IEEE Conference on Foundations of Computer Science (FOCS 2015).
 - 27th IEEE Conference on Computational Complexity (CCC’12), June 2012.

- **Journal Editorial Boards:**
 - TheoretCS, Dec 2021-June 2024 (Inaugural board member).
 - Journal of the ACM, 2015-2021.
 - SIAM Journal on Computing, 2009-17.
 - IEEE Transactions on Information Theory, 2010-2013.
 - ACM Transactions on Computation Theory, 2008-2015.
- Workshop/program organization
 - Co-organizer, Dagstuhl Seminar on The Constraint Satisfaction Problem: Complexity and Approximability, May/June 2025.
 - Co-organizer, Semester program “Error-correcting codes: Theory and Practice”, Spring 2024, Simons Institute for the Theory of Computing.
 - Co-organizer, Dagstuhl Seminar in May 2022 on The Constraint Satisfaction Problem: Complexity and Approximability.
 - Co-organizer, Dagstuhl Seminar in June 2018 on The Constraint Satisfaction Problem: Complexity and Approximability.
 - Co-organizer, Workshop on Mathematics of Information-Theoretic Cryptography, Institute of Mathematical Science, National University of Singapore, September 2016.
 - Co-organizer, Semester program on Information Theory, Spring 2015, Simons Institute for the Theory of Computing.
 - Co-organizer, Dagstuhl Seminar in July 2015 on The Constraint Satisfaction Problem: Complexity and Approximability.
 - Co-organizer, School and Workshop on Mathematics of Information-Theoretic Cryptography, Lorentz Center, Leiden, May 13-17 and May 21-25, 2013,
 - Co-organizer, Summer Thematic Program on Constraint Satisfaction, Fields Institute, Toronto, July-August 2011.
- Member, Board of Trustees and Awards Chair, Computational Complexity Foundation, Inc., August 2014-present.
- SIGACT executive committee member, July 2012-June 2015.
- Conference Steering Committee, IEEE Conference on Computational Complexity (CCC), July 2012-August 2014.
- Scientific board member, Electronic Colloquium on Computational Complexity, 2009-present.
- Area editor (Coding algorithms), Encyclopedia of Algorithms (published by Springer)
- Guest editorshop for journal special issues:
 - Guest co-editor (with S. Chawla and C. Dwork), *SIAM J. Computing*, special issue on selected papers from STOC 2008.
 - Guest co-editor (with V. Kabanets), *Computational Complexity*, **16**(2), 2007. Special issue on selected papers from CCC 2006 – the 21st IEEE Conference on Computational Complexity.
 - Guest co-editor (with E. Cohen), *Journal of Computer and System Sciences*, **68**(4), June 2004. Special issue on selected papers from FOCS 2002.

- Conference Program Committee memberships:
 - (i) *STOC 2022*, 54th ACM Symposium on Theory of Computing, June 2022.
 - (ii) *FOCS 2019*, 60th Annual IEEE Symposium on Foundations of Computer Science, November 2019.
 - (iii) *APPROX 2017*, 20th Intl. Workshop on Approximation Algorithms for Combinatorial Optimization Problems, August 2017.
 - (iv) *STOC 2015*, 47th ACM Symposium on Theory of Computing, June 2015.
 - (v) *ISITA 2012*, International Symposium on Information Theory and its Applications, October 2012.
 - (vi) *ISIT 2012*, IEEE International Symposium on Information Theory, July 2012.
 - (vii) *STOC 2011*, 43rd ACM Symposium on Theory of Computing, June 2011.
 - (viii) *CCC 2010*, 25th IEEE Conference on Computational Complexity, June 2010.
 - (ix) *SODA 2010*, ACM-SIAM Symposium on Discrete Algorithms, January 2010.
 - (x) *FSTTCS 2008*, 28th Annual Conference on Foundations of Software Technology and Theoretical Computer Science, December 2008.
 - (xi) *STOC 2008*, 40th ACM Symposium on Theory of Computing, May 2008.
 - (xii) *ITW 2008*, Information Theory Workshop, May 2008.
 - (xiii) *LATIN 2008*, 8th Latin American Theoretical Informatics Symposium, April 2008.
 - (xiv) *CATS 2008*, Computing: The Australasian Theory Symposium, January 2008.
 - (xv) *APPROX 2007*, 10th Intl. Workshop on Approximation Algorithms for Combinatorial Optimization Problems, August 2007.
 - (xvi) *ISIT 2006*, IEEE International Symposium on Information Theory, July 2006.
 - (xvii) *CCC 2006*, 21st IEEE Conference on Computational Complexity, July 2006.
 - (xviii) *FOCS 2005*, 46th Annual IEEE Symposium on Foundations of Computer Science, October 2005.
 - (xix) *FSTTCS 2005*, 25th Annual Conference on Foundations of Software Technology and Theoretical Computer Science, December 2005.
 - (xx) *FOCS 2002*, 43rd Annual IEEE Symposium on Foundations of Computer Science, November 2002.
- *Organizer, Minisymposium on coding theory, DM 2006*: SIAM Conference on Discrete Mathematics, June 2006.

7 Research advising and mentoring

7.1 Undergraduate Student Mentoring

At University of California, Berkeley

- Rohit Agarwal (2023-24).
Worked on topics in constraint satisfaction and coding theory. Started PhD program at Princeton Fall 2024.

At Carnegie Mellon University

- Omar Alrabiah (2018-21).
Worked on research in error-correcting codes leading to papers at the STOC 2019 and RANDOM 2021 conferences.
- Zhen Zhou (2019-20).
Honors thesis: “2-deletion codes: Beyond binary”
- Patrick Lin (2018-19).
Worked on senior thesis on parameterized approximation.
- Joshua Brakensiek (2015-18).
Winner of the 2018 CRA Outstanding Undergraduate Researcher award.
Honors/Master’s thesis: “Polymorphic Inquiries: Promise Constraint Satisfaction and Beyond?”
Worked on research in coding theory and constraint satisfaction leading to numerous publications (eg. in SODA 2016, CCC 2016, APPROX 2017, SODA 2018, STOC 2019 (x2), SODA 2019).
- Ray Li (2016-17).
Honors thesis: ” New developments in coding against insertions and deletions”
Worked on codes for insertions and deletions leading to publications in ISIT 2016, RANDOM 2017, and SODA 2018.

7.2 Graduate Student Mentoring

Current Ph.D. students

- Omar Alrabiah (4th year)
- Louis Golowich (3rd year)
- Meghal Gupta (3rd year)
- Shilun Li (3rd year, Mathematics)
- Xuandi Ren (3rd year)
- Mihir Singhal (2nd year)
- Pranav Trivedi (5th year, Mathematics)

Graduated PhD students

At University of Washington

- Atri Rudra, June 2007.
Dissertation title: *List decoding and property testing of error-correcting codes*.
Co-winner of the William Chan Memorial Dissertation Award at the University of Washington.
Atri is a Professor at University at Buffalo, The State University of New York.

- Prasad Raghavendra, August 2009.
Dissertation title: *Approximating NP-hard problems: Efficient algorithms and their limits.*
Co-winner of the William Chan Memorial Dissertation Award at the University of Washington.
Prasad is a Professor at the University of California, Berkeley.

At Carnegie Mellon University

- Ali Kemal Sinop, May 2012.
Dissertation title: *Graph partitioning and semidefinite programming hierarchies.*
Ali Kemal is currently a research scientist at Google.
- Yuan Zhou, August 2014.
Dissertation title: *New Directions in Approximation Algorithms and Hardness of Approximation.*
Yuan is currently a faculty at the Yau Mathematical Sciences Center at Tsinghua University.
- Carol Wang, September 2015.
Dissertation title: *Beyond unique decoding: topics in error-correcting codes.*
Carol is currently employed at Google.
- Ameya Velingker, August 2016.
Dissertation title: *New Directions in Coding Theory: Capacity and Limitations*
Ameya is currently a research scientist at Google.
- Euiwoong Lee, May 2017.
Dissertation title: *Optimal Approximabilities beyond CSPs*
Winner of the Edmund M. Clarke Doctoral Dissertation Award.
Euiwoong is an Assistant Professor at the University of Michigan.
- Vijay Bhattiprolu, June 2019.
Dissertation title: *On the Approximability of Injective Tensor Norm*
Vijay is currently an Assistant Professor at the University of Waterloo.
- Nicolas Resch, May 2020.
Dissertation title: *List-Decodable Codes: (Randomized) Constructions and Applications*
Nic is a faculty member at the University of Amsterdam.
- Andrii Riazanov, May 2022.
Dissertation title: *Polar Codes with Near-Optimal Convergence to Channel Capacity*
Andrii is employed at the Susquehanna International Group, a global quantitative trading firm.
- Sai Sandeep, Aug 2022.
Dissertation title: *New Directions in Inapproximability: Promise Constraint Satisfaction Problems and Beyond*
Sandeep is currently employed at Citadel.
- Peter Manohar, Aug 2024.
Dissertation title: *New Spectral Techniques in Algorithms, Combinatorics, and Coding Theory: The Kikuchi Matrix Method*
Peter is currently a postdoctoral fellow at the Institute for Advanced Study, Princeton.

7.3 Postdoctoral mentoring

- Joshua Brakensiek, Aug 2024-present.
- Hsin-Po Wang, Oct 2022-May 2024.
Current employment: National Taiwan University (Assistant Professor)
- Sai Sandeep, Sep 2022-May 2023.
Current employment: Citadel
- Ray Li, Aug 2022-Aug 2023.
Current employment: Santa Clara University (Assistant Professor)
- Joao Ribeiro, Aug 2021-Feb 2023.
Current employment: IST — Universidade de Lisboa (Assistant Professor)
- Jonathan Mosheiff, Oct 2019-Mar 2022.
Current employment: Ben-Gurion University (Senior Lecturer (Assistant Professor))
- Alperen Ergur, Sept 2019-Aug 2020.
Current employment: Univ. of Texas at San Antonio (Assistant Professor of Mathematics)
- Mary Wootters, Sept 2014-July 2016.
Current employment: Stanford University (Associate Professor)
- Ankit Singh Rawat, Sept 2015-August 2016.
Current employment: Google Research (New York)
- Mahdi Cheraghchi, Sept 2011-June 2013.
Current employment: University of Michigan (Associate Professor)
- Krzysztof Onak (Simons postdoctoral fellow), Sept 2010-Aug 2012.
Current employment: Boston University (Assistant Professor)
- Rishi Saket, Sept 2009-Aug 2010.
Current employment: Google Research India
- Parikshit Gopalan, March 2007-June 2008.
Current employment: Apple Research

8 Recent talks and seminars

(during last six years)

- T1) “When and How are (promise) Constraint Satisfaction Problems Efficiently Solvable?”, CSDM seminar, Institute for Advanced Study, Princeton, October 2024.
- T2) “The Parameterized Inapproximability Hypothesis,” CS Theory seminar, University of Texas at Austin, October 2024.
- T3) “Combinatorial challenges in coding theory: A sampler,” Workshop on Synergies of Combinatorics and Theoretical Computer Science, EPFL, Lausanne, Switzerland, August 2024.

- T4) “Error-correcting codes,” Five 2 hour lectures in summer school organized by the African Institute of Mathematical Sciences (AIMS), Kigali, Rwanda, August 2024.
- T5) “When and why do efficient algorithms exist (for constraint satisfaction and beyond)?” **Plenary talk**, International Congress of Basic Science (ICBS), Beijing, China, July 2024.
- T6) “A few options go a long way: List decoding and applications,” **Plenary talk**, International Symposium on Information Theory (ISIT), Athens, Greece, July 2024.
- T7) “Polymorphism minions and promise constraint satisfaction: A gateway between information and computation,” Invited talk, Krakow workshop on Computation, Logic, and Information, Krakow, Poland, July 2024.
- T8) “When and why do efficient algorithms exist (for constraint satisfaction and beyond)?” IST Austria, July 2024.
- T9) “How Non-Commutativity Helps Data Centers: Maximally Recoverable Codes from Skew Polynomials,” Charles University, Prague, June 2024.
- T10) “When and why do efficient algorithms exist (for constraint satisfaction and beyond)?” University of Cambridge, June 2024.
- T11) “Parameterized Inapproximability Hypothesis under ETH,” Imperial College, London, June 2024.
- T12) “When and why do efficient algorithms exist (for constraint satisfaction and beyond)?” Université Paris 7, June 2024.
- T13) “A few options go a long way: List decoding and applications,” Public lecture, CWI Amsterdam, July 2024.
- T14) “The Parameterized Inapproximability Hypothesis,” **Plenary talk**, Oberwolfach complexity theory meeting, Mathematisches Forschungsinstitut Oberwolfach, June 2024.
- T15) “A near-tight lower bound for 3-query locally correctable codes,” Oberwolfach complexity theory meeting, Mathematisches Forschungsinstitut Oberwolfach, June 2024.
- T16) “A few options go a long way: List decoding and applications,” *Richard M. Karp Distinguished lecture*, Simons Institute, April 2024.
- T17) “Parameterized Inapproximability Hypothesis under ETH,” Theory seminar, New York University, April 2024.
- T18) “Solving semirandom planted CSPs via SDP-certificates and spectral sparsification,” Stanford ISL Colloquium, February 2024.
- T19) “The Exponential Time Hypothesis implies the Parameterized Inapproximability Hypothesis,” Institute of Mathematical Sciences, Chennai, Dec 2023.
- T20) “Parameterized hardness of approximating the minimum distance problem on codes,” Institute of Mathematical Sciences, Chennai, Dec 2023.
- T21) “Solving semirandom planted CSPs via SDP-certificates and spectral sparsification,” Workshop on Spectral Methods (post FSTTCS workshop), Hyderabad, Dec 2023.

- T22) ““When and why do efficient algorithms exist (for constraint satisfaction and beyond)?” Colorado College, Mathematics and Computer Science Colloquium, Sep 2023.
- T23) “How non-commutativity helps data centers: Maximally Recoverable codes from skew polynomials,” Plenary talk at Workshop on Algebra and Computation, Gothenburg, Sweden, August 2023.
- T24) Two talks: “Parameterized hardness of approximating the minimum distance problem on codes” and “Baby PIH: Parameterized inapproximability of Min CSP” at the Dagstuhl seminar on Parameterized Approximation: Algorithms and Hardness, July 2023.
- T25) “A near-cubic lower bound for 3-query locally decodable codes,” Institute of Mathematical Sciences, Chennai, Dec 2022.
- T26) “When and why do efficient algorithms exist (for constraint satisfaction and beyond)?” Cornell University CS Colloquium, Nov 2022.
- T27) “When and why do efficient algorithms exist (for constraint satisfaction and beyond)?” University of Rochester CS Colloquium, Nov 2022.
- T28) “A near-cubic lower bound for 3-query locally decodable codes,” TCS+ invited seminar, Oct 2022.
- T29) “Recent Progress on Binary Deletion-Correcting Codes,” International Conference on Coding and Cryptography (ICCC, Virtual), May 2022.
- T30) “Recent Progress on Binary Deletion-Correcting Codes,” UC Santa Barbara Theory Seminar, March 2022.
- T31) “Recent Progress on Binary Deletion-Correcting Codes,” Highlights of Algorithms, Survey Talk, June 2021.
- T32) “The polymorphic gateway between structure and algorithms: Constraint Satisfaction and Beyond,” Shanghai Jiao Tong University Colloquium (virtual), April 2021.
- T33) “Strong refutation of semi-random Boolean CSPs,” CSDM seminar, Institute for Advanced Study, March 2021.
- T34) “Arikan meets Shannon: Polar codes with near-optimal convergence to channel capacity,” Shanghai Jiao Tong University (virtual seminar), September 2020.
- T35) “Arikan meets Shannon: Polar codes with near-optimal convergence to channel capacity,” TCS-plus seminar series, April 2020.
- T36) “Sub-packetization of Minimum Storage Regenerating codes: A lower bound and a work-around,” Google Research, Mountain View, August 2019.
- T37) “The polymorphic gateway between structure and algorithms: Constraint Satisfaction and Beyond,” TCS-IITM Colloquium, Indian Institute of Technology Madras, March 2019.
- T38) “Sub-packetization of Minimum Storage Regenerating codes: A lower bound and a work-around”, Theory seminar, Stanford University, February 2019.
- T39) “Solving a linear system with a global congruency constraint,” Institute of Mathematical Sciences, Chennai, India, January 2019.

- T40) “Algebraic CSP dichotomy theorem: A polymorphic gateway between structure and algorithms,” Plenary lecture, Oberwolfach Complexity Theory meeting, Mathematisches Forschungsinstitut Oberwolfach, November 2018.
- T41) “Lossless dimension expanders,” Oberwolfach Complexity Theory meeting, Mathematisches Forschungsinstitut Oberwolfach, November 2018.
- T42) “The polymorphic gateway between structure and algorithms: CSPs and beyond,” Distinguished Lecture, Department of Computer Science, University of Illinois at Urbana-Champaign, October 2018.
- T43) “The polymorphic gateway between structure and algorithms: Beyond CSPs,” Algorithms and Randomness Center Colloquium, Georgia Tech, December 2018.
- T44) “How many deleted bits can one recover?”, Georgia Tech undergraduate “big-O” theory club, December 2018.
- T45) “Polymorphic inquiries: (Promise) constraint satisfaction, fine-grained complexity, and more,” Lecture series (5×1.5 hours), Institute of Mathematical Sciences, Chennai, India, July-August 2018.
- T46) “Improved bounds for perfect hashing,” MIT Algorithms and Complexity seminar, 2018.
- T47) “Polymorphisms beget algorithms: Promise CSP, fine-grained complexity, and more,” 3 hour lecture, Harvard University (Center of Mathematical Sciences and Applications), May 2018.

9 Publications

9.1 Books

- [B1] V. Guruswami. *List decoding of error-correcting codes*. Springer, Lecture Notes in Computer Science 3282, 2004. (Winning Thesis of the 2002 ACM Doctoral Dissertation Competition).
- [B2] V. Guruswami. *Algorithmic Results in List Decoding*, volume 2 of *Foundations and Trends in Theoretical Computer Science (FnT-TCS)*. NOW publishers, January 2007.

9.2 Journal publications

- [J1] H. Bennett, M. Cheraghchi, V. Guruswami, and J. Ribeiro. Parameterized inapproximability of the minimum distance problem over all fields and the shortest vector problem in all ℓ_p norms. *SIAM J. Comput.*, 53(5):1439–1475, 2024.
- [J2] O. Alrabiah, V. Guruswami, and R. Li. AG codes have no list-decoding friends: Approaching the generalized Singleton bound requires exponential alphabets. *IEEE Transactions on Information Theory*, 2024.
- [J3] V. Guruswami and J. Mosheiff. Punctured Low-Bias Codes Behave Like Random Linear Codes. *Discrete Analysis*, June 2024.
- [J4] V. Guruswami, X. He, and R. Li. The zero-rate threshold for adversarial bit-deletions is less than $1/2$. *IEEE Trans. Inf. Theory*, 69(4):2218–2239, 2023.
- [J5] K. Cheng, V. Guruswami, B. Haeupler, and X. Li. Efficient linear and affine codes for correcting insertions/deletions. *SIAM J. Discret. Math.*, 37(2):748–778, 2023.

- [J6] V. Bhattiprolu, M. K. Ghosh, V. Guruswami, E. Lee, and M. Tulsiani. Inapproximability of matrix $p \rightarrow q$ norms. *SIAM J. Comput.*, 52(1):132–155, 2023.
- [J7] R. Gabrys, V. Guruswami, J. Ribeiro, and K. Wu. Beyond single-deletion correcting codes: Substitutions and transpositions. *IEEE Trans. Inf. Theory*, 69(1):169–186, 2023.
- [J8] J. Brakensiek, V. Guruswami, and S. Sandeep. Conditional dichotomy of boolean ordered promise csps. *TheoretCS*, 2, 2023.
- [J9] V. Guruswami and C. Xing. Optimal rate list decoding over bounded alphabets using algebraic-geometric codes. *Journal of the ACM*, 69(2):10:1–10:48, 2022.
- [J10] V. Guruswami, A. Riazanov, and M. Ye. Arkan meets Shannon: Polar codes with near-optimal convergence to channel capacity. *IEEE Trans. Inf. Theory*, 68(5):2877–2919, 2022.
- [J11] J. Blasiok, V. Guruswami, P. Nakkiran, A. Rudra, and M. Sudan. General strong polarization. *Journal of the ACM*, 69(2):11:1–11:67, 2022.
- [J12] V. Guruswami and A. Riazanov. Beating Fredman-Komlós for perfect k -hashing. *J. Comb. Theory, Ser. A*, 188:105580, 2022.
- [J13] J. Brakensiek, S. Gopi, and V. Guruswami. Constraint satisfaction problems with global modular constraints: Algorithms and hardness via polynomial representations. *SIAM J. Comput.*, 51(3):577–626, 2022.
- [J14] S. Gopi and V. Guruswami. Improved maximally recoverable LRCs using skew polynomials. *IEEE Trans. Inf. Theory*, 68(11):7198–7214, 2022.
- [J15] V. Arvind and V. Guruswami. CNF satisfiability in a subspace and related problems. *Algorithmica*, 84(11):3276–3299, 2022.
- [J16] V. Guruswami, J. Moshieff, N. Resch, S. Silas, and M. Wootters. Threshold rates for properties of random codes. *IEEE Trans. Inf. Theory*, 68(2):905–922, 2022.
- [J17] V. Guruswami, R. Li, J. Moshieff, N. Resch, S. Silas, and M. Wootters. Bounds for list-decoding and list-recovery of random linear codes. *IEEE Trans. Inf. Theory*, 68(2):923–939, 2022.
- [J18] V. Guruswami, B. Haeupler, and A. Shahrabi. Optimally resilient codes for list-decoding from insertions and deletions. *IEEE Trans. Inf. Theory*, 67(12):7837–7856, 2021.
- [J19] J. Brakensiek and V. Guruswami. Promise constraint satisfaction: Algebraic structure and a symmetric Boolean dichotomy. *SIAM J. Comput.*, 50(6):1663–1700, 2021.
- [J20] O. Alrabiah and V. Guruswami. An exponential lower bound on the sub-packetization of minimum storage regenerating codes. *IEEE Trans. Inf. Theory*, 67(12):8086–8093, 2021.
- [J21] J. Brakensiek and V. Guruswami. The quest for strong inapproximability results with perfect completeness. *ACM Trans. Algorithms*, 17(3):27:1–27:35, 2021.
- [J22] V. Guruswami, N. Resch, and C. Xing. Lossless dimension expanders via linearized polynomials and subspace designs. *Combinatorica*, (4):545–579, 2021.
- [J23] V. Guruswami and J. Håstad. Explicit two-deletion codes with redundancy matching the existential bound. *IEEE Transactions on Information Theory*, 67(10):6384–6394, 2021.

- [J24] J. Brakensiek, V. Guruswami, M. Wrochna, and S. Zivný. The power of the combined basic linear programming and affine relaxation for promise constraint satisfaction problems. *SIAM J. Comput.*, 49(6):1232–1248, 2020.
- [J25] V. Guruswami, S. Lokam, and S. Vikneshwar. epsilon-MSR codes: Contacting fewer code blocks for exact repair. *IEEE Transactions on Information Theory*, 66(11):6749–6761, 2020.
- [J26] V. Guruswami, L. Jin, and C. Xing. Constructions of maximally recoverable local reconstruction codes via function fields. *IEEE Trans. Inf. Theory*, 66(10):6133–6143, 2020.
- [J27] S. Gopi, V. Guruswami, and S. Yekhanin. Maximally recoverable LRCs: A field size lower bound and constructions for few heavy parities. *IEEE Trans. Inf. Theory*, 66(10):6066–6083, 2020.
- [J28] V. Guruswami and S. Sandeep. Rainbow coloring hardness via low sensitivity polymorphisms. *SIAM J. Discret. Math.*, 34(1):520–537, 2020.
- [J29] V. Guruswami and R. Li. Coding against deletions in oblivious and online models. *IEEE Trans. Inf. Theory*, 66(4):2352–2374, 2020.
- [J30] M. Dalai, V. Guruswami, and J. Radhakrishnan. An improved bound on the zero-error list-decoding capacity of the $4/3$ channel. *IEEE Trans. Information Theory*, 66(2):749–756, 2020.
- [J31] V. Guruswami and R. Li. Polynomial time decodable codes for the binary deletion channel. *IEEE Trans. Information Theory*, 65(4):2171–2178, 2019.
- [J32] V. Guruswami, C. Xing, and C. Yuan. How long can optimal locally repairable codes be? *IEEE Trans. Information Theory*, 65(6):3662–3670, 2019.
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9.3 Refereed conference publications

Main venues: STOC/FOCS (60), SODA (36), CCC (19), APPROX/RANDOM (35)

- [C1] L. Golowich and V. Guruswami. Quantum locally recoverable codes. In *35th Annual ACM-SIAM Symposium on Discrete Algorithms*, 2025. To appear.
- [C2] O. Alrabiah and V. Guruswami. Near-tight bounds for 3-query locally correctable binary linear codes via rainbow cycles. In *Proceedings of the 65th IEEE Symposium on Foundations of Computer Science*, 2024.
- [C3] V. Guruswami, J. Hsieh, and P. Raghavendra. Certifying euclidean sections and finding planted sparse vectors beyond the \sqrt{n} dimension threshold. In *Proceedings of the 65th IEEE Symposium on Foundations of Computer Science*, 2024.
- [C4] L. Golowich and V. Guruswami. Decoding quasi-cyclic quantum LDPC codes. In *Proceedings of the 65th IEEE Symposium on Foundations of Computer Science*, 2024.
- [C5] V. Guruswami and H. Wang. Capacity-achieving Gray codes. In *Approximation, Randomization, and Combinatorial Optimization. Algorithms and Techniques, (APPROX/RANDOM)*, volume 317 of *LIPICs*, pages 65:1–65:9. Schloss Dagstuhl - Leibniz-Zentrum für Informatik, 2024.
- [C6] V. Arora, A. Bhattacharyya, M. Boban, V. Guruswami, and E. Kelman. Outlier robust multivariate polynomial regression. In *32nd Annual European Symposium on Algorithms (ESA)*, volume 308 of *LIPICs*, pages 12:1–12:17. Schloss Dagstuhl - Leibniz-Zentrum für Informatik, 2024.
- [C7] V. Guruswami, X. Ren, and S. Sandeep. Baby PIH: parameterized inapproximability of min CSP. In R. Santhanam, editor, *39th Computational Complexity Conference (CCC)*, volume 300 of *LIPICs*, pages 27:1–27:17. Schloss Dagstuhl - Leibniz-Zentrum für Informatik, 2024.
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- [C11] V. Guruswami and R. Saket. Hardness of learning boolean functions from label proportions. In P. Bouyer and S. Srinivasan, editors, *43rd IARCS Annual Conference on Foundations of Software Technology and Theoretical Computer Science, FSTTCS*, volume 284 of *LIPIcs*, pages 37:1–37:15. Schloss Dagstuhl - Leibniz-Zentrum für Informatik, 2023.
- [C12] V. Guruswami and S. Li. A deterministic construction of a large distance code from the wozencraft ensemble. In N. Megow and A. D. Smith, editors, *Approximation, Randomization, and Combinatorial Optimization. Algorithms and Techniques, APPROX/RANDOM*, volume 275 of *LIPIcs*, pages 50:1–50:10. Schloss Dagstuhl - Leibniz-Zentrum für Informatik, 2023.
- [C13] V. Guruswami, J. Hsieh, P. K. Kothari, and P. Manohar. Efficient algorithms for semirandom planted CSPs at the refutation threshold. In *Proceedings of the 64th IEEE Symposium on Foundations of Computer Science*, pages 307–327, 2023.
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9.4 Invited papers and surveys

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