Amit Chakrabarti

Curriculum Vitae
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Professor
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Research Interests

- **Complexity theory** for concrete models of computation, especially **communication complexity** and **data streaming**.

- **Algorithms**, especially for the **efficient processing of big data** under space and communication restrictions, and coping with computational hardness via **approximation**.

Education

- **Ph.D.** in Computer Science, Princeton University, Nov 2002

    Thesis Title: Limitations of Non-Uniform Computational Models
    Advisor: Bernard Chazelle

- **M.A.** in Computer Science, Princeton University, Jun 1999

- **B.Tech.** in Computer Science & Engineering, Indian Institute of Technology (IIT), Bombay, Aug 1997

Professional Experience

2015–present: Professor, Department of Computer Science, Dartmouth College.

2009–2015: Associate Professor (with tenure), Department of Computer Science, Dartmouth College.

2003–2009: Assistant Professor, Department of Computer Science, Dartmouth College.

Oct–Nov 2018: Visiting Scientist, Simons Institute for the Theory of Computing, University of California, Berkeley, CA.

Apr 2015: Visiting Scientist, Simons Institute for the Theory of Computing, University of California, Berkeley, CA.

Feb 2014: Visiting Researcher, Microsoft Research India, Bangalore, India.

Aug–Dec 2013: Visiting Scientist, Simons Institute for the Theory of Computing, University of California, Berkeley, CA.

Aug 2010: Visiting Associate Professor, Centre for Quantum Technologies, National University of Singapore, Singapore.

July 2010: Visiting Researcher, Microsoft Research India, Bangalore, India.

Feb 2008: Visiting Assistant Professor, Department of Computer Science, University of Texas, Austin, TX.

August 2007: Visiting Researcher, AT&T Labs – Research, Florham Park, NJ.

July 2007: Visiting Researcher, DIMACS (Rutgers University) and Google Labs, New York, NY.

May–Jun 2007: Visiting Researcher, IBM Almaden Research Center, San Jose, CA.

Jan–May 2007: Visiting Assistant Professor, Department of Computer Science and Engineering, University of Washington, Seattle, WA.

August 2006: Visiting Researcher, IBM Almaden Research Center, San Jose, CA.

June–July 2005: Visiting Assistant Professor, Department of Computer Science and Software Engineering, University of Melbourne, Australia.

August 2004: Visiting Researcher, IBM Almaden Research Center, San Jose, CA.

2002–2003: Postdoctoral Fellow, School of Mathematics, Institute for Advanced Study, Princeton, NJ.

1999–2002: Research Assistant, Princeton University, Princeton, NJ.

Summer 2001: Summer intern at Bell Laboratories, Murray Hill, NJ. Worked in the Computing Sciences Research Center.

Summer 2000: Summer manager at AT&T Labs – Research, Florham Park, NJ. Worked in the Algorithms and Optimization Department.

1997–2000: Teaching Assistant, Princeton University, Princeton, NJ. Work spanned five undergraduate courses.

Summer 1996: Summer intern at IBM India Limited (formerly TISL), Bangalore, India. Worked in the PowerPC architecture group.

Fall 1995: Teaching Assistant, IIT Bombay, Mumbai, India.

Awards and Honors

- FOCS 20-year Test-of-Time Award, IEEE FOCS 2021.

- Royal Society (UK) Wolfson Research Merit Award, 2017 (declined).

- Friedman Family Fellowship, 2015–2016.

- Dartmouth College Senior Faculty Fellowship, Fall 2013.

- McLane Family Fellowship, 2009–2010.

- Karen E. Wetterhahn Memorial Award for Distinguished Creative or Scholarly Achievement, 2009.

- Dartmouth College Junior Faculty Fellowship, Spring 2007.

- National Science Foundation CAREER Award, 2005.

- Postdoctoral Fellow, School of Mathematics, Institute for Advanced Study, 2002–2003.

- DIMACS Summer Research Fellow, 1998.

- President of India Gold Medalist of IIT Bombay's Class of 1997.

- Silver Medalist at the International Mathematical Olympiad, 1993.

Research Support

- National Science Foundation, "Communication complexity techniques beyond classical information theory," $497,639. Oct 2020 – Sep 2023.

- Dartmouth College, Scholarly Innovation and Advancement Award, "Algorithms for Verifiable Computation with Massive Graphs," $36,000. Mar 2020 – Jun 2022.

- National Science Foundation, "New Challenges in Graph Stream Algorithms and Related Communication Games," $249,995. Jul 2019 – Jun 2021.

- National Science Foundation, "Data Streaming with a View towards Cloud Computing," $300,000. Sep 2016 – Feb 2019.

- National Science Foundation, "Foundational Research in Communication Complexity and Its Applications," $440,000. Sep 2012 – Aug 2016.

- Neukom Institute (Dartmouth College) CompX Faculty Grant, "Efficient representations of configuration spaces for robot motion planning," $20,000. Mar 2012 – Feb 2013.

- Dartmouth College Senior Faculty Fellowship, $700. Sep–Dec 2013.

- National Science Foundation, "Data Streaming through a Complexity-Theoretic Lens," $336,456. Aug 2009 – Jul 2013.

- McLane Family Fellowship, $1,500. Jul 2009 – Jun 2010.

- National Science Foundation CAREER Award, "Information Theoretic Methods in Communication and Computational Complexity," $400,000. Jul 2005 – Jun 2010.

- Dartmouth College Junior Faculty Fellowship, $700. Apr–Jun 2007.

- Dartmouth College Burke Award, $20,000. Aug 2003 – Jun 2009.

Publications

A.   In International Journals

[J1] "Verifiable Stream Computation and Arthur–Merlin Communication," (with G. Cormode, A. McGregor, J. Thaler, S. Venkatasubramanian), *SIAM Journal on Computing*, **48**(4), 2019, pp. 1265–1299.

[J2] "Certifying Equality With Limited Interaction," (with J. Brody, R. Kondapally, D. P. Woodruff, G. Yaroslavtsev), *Algorithmica*, **76**(3), 2016, pp. 796–845.

[J3] "Robust Lower Bounds for Communication and Stream Computation," (with G. Cormode, A. McGregor), *Theory of Computing*, **12**, Art. No. 10, 2016, pp. 1–35.

[J4] "Submodular Maximization Meets Streaming: Matchings, Matroids, and More," (with S. Kale), *Mathematical Programming, Series B*, **154**(1–2), 2015, pp. 225–247.

[J5] "A Fast Online Spanner for Roadmap Construction," (with W. Wang, D. Balkcom), *International Journal of Robotics Research*, **34**(11), 2015, pp. 1418–1432.

[J6] "Annotations in Data Streams," (with G. Cormode, A. McGregor, J. Thaler), *ACM Transactions on Algorithms*, **11**(1), Art. No. 7, 2014.

[J7] "Information Cost Tradeoffs for Augmented Index and Streaming Language Recognition," (with G. Cormode, R. Kondapally, A. McGregor), *SIAM Journal on Computing*, **42**(1), 2013, pp. 61–83.

[J8]   "An Optimal Lower Bound on the Communication Complexity of Gap-Hamming-Distance,"
        (with O. Regev), *SIAM Journal on Computing*, **41**(5), 2012, pp. 1299–1317.

[J9]   "A Note on Randomized Streaming Space Bounds for the Longest Increasing Subsequence
        Problem," (sole author), *Information Processing Letters*, **112**(7), 2012, pp. 261–263.

[J10]   "An improved approximation algorithm for resource allocation," (with G. Calinescu, H. Karloff,
        Y. Rabani), *ACM Transactions on Algorithms*, **7**(4), Art. No. 48, Sep 2011.

[J11]   "The Query Complexity of Estimating Weighted Averages," (with V. Guruswami, A. Wirth,
        A. Wirth), *Acta Informatica*, **48**(7), 2011, pp. 417–426.

[J12]   "Combinatorial Theorems about Embedding Trees on the Real Line," (with S. Khot), *Journal
        of Graph Theory*, **67**(2), 2011, pp. 153–168.

[J13]   "An Optimal Randomized Cell Probe Lower Bound for Approximate Nearest Neighbor Search-
        ing," (with O. Regev), *SIAM Journal on Computing*, **39**(5), 2010, pp. 1919–1940.

[J14]   "A Near-Optimal Algorithm for Estimating the Entropy of a Stream," (with G. Cormode,
        A. McGregor), *ACM Transactions on Algorithms*, **6**(3), Art. No. 51, Jun 2010.

[J15]   "Improved Lower Bounds on the Randomized Complexity of Graph Properties," (with S. Khot),
        Random Structures and Algorithms, **30**(3), 2007, pp. 427–440.

[J16]   "Approximation Algorithms for the Unsplittable Flow Problem," (with C. Chekuri, A. Gupta,
        A. Kumar), *Algorithmica*, **47**(1), 2007, pp. 53–78.

[J17]   "Estimating Entropy and Entropy Norm on Data Streams," (with K. Do Ba, S. Muthukrish-
        nan), *Internet Mathematics*, **3**(1), 2006, pp. 63–78.

[J18]   "A Lower Bound on the Complexity of Approximate Nearest Neighbor Searching on the
        Hamming Cube," (with B. Chazelle, B. Gum, A. Lvov), *Discrete and Computational Geometry:
        The Goodman-Pollack Festschrift*, Springer-Verlag, 2003, pp. 313–328.

[J19]   "Evasiveness of Subgraph Containment and Related Properties," (with S. Khot, Y. Shi), *SIAM
        Journal on Computing*, **31**(3), 2002, pp. 866–875.

B.   In Proceedings of Refereed International Conferences

[C1]   "Adversarially Robust Coloring for Graph Streams," (with P. Ghosh and M. Stoeckl), *ITCS
        2022, the 13th Innovations in Theoretical Computer Science Conference*, 2022, pp. 37:1–
        37:23.

[C2]   "Streaming Verification for Graph Problems: Optimal Tradeoffs and Nonlinear Sketches,"
        (with P. Ghosh, J. Thaler), *RANDOM 2020, the 24th International Conference on Randomiza-
        tion and Computation*, 2020, pp. 22:1–22:23

[C3]   "Graph Coloring via Degeneracy in Streaming and Other Space-Conscious Models," (with
        S. K. Bera, P. Ghosh), *ICALP 2020, the 47th International Colloquium on Automata, Languages
        and Programming*, 2020, pp. 11:1–11:21.

[C4]   "Vertex Ordering Problems in Directed Graph Streams," (with P. Ghosh, A. McGregor, S. Vorot-
        nikova), *SODA 2020, the 31st Annual ACM-SIAM Symposium on Discrete Algorithms*, 2020,
        pp. 1786–1802.

[C5]   "Streaming Verification of Graph Computations via Graph Structure," (with P. Ghosh), *RAN-
        DOM 2019, the 23rd International Conference on Randomization and Computation*, 2019,
        pp. 70:1–70:20.

[C6]   "Towards Tighter Space Bounds for Counting Triangles and Other Substructures in Graph
        Streams," (with S. K. Bera), *STACS 2017, the 34th International Symposium on Theoretical
        Aspects of Computer Science*, 2017, pp. 11:1–11:14.

[C7]   "Strong Fooling Sets for Multi-player Communication with Applications to Deterministic Es-
        timation of Stream Statistics," (with S. Kale), *FOCS 2016, the 57th Annual IEEE Symposium
        on Foundations of Computer Science*, 2016, pp. 41–50.

[C8]   "Incidence Geometries and the Pass Complexity of Semi-Streaming Set Cover," (with A. Wirth), *SODA 2016, the 27th Annual ACM-SIAM Symposium on Discrete Algorithms*, 2016, pp. 1365–1373.

[C9]   "On Density, Threshold and Emptiness Queries for Intervals in the Streaming Model," (with A. Bishnu, S. Nandy, S. Sen), *FSTTCS 2015, the 35th IARCS Annual Conference on Foundations of Software Technology and Theoretical Computer Science*, 2015, pp. 336–349.

[C10] "A Depth-Five Lower Bound for Iterated Matrix Multiplication," (with S. K. Bera), *CCC 2015, the 30th Annual IEEE Conference on Computational Complexity*, 2015, pp. 183–197.

[C11] "Verifiable Stream Computation and Arthur–Merlin Communication," (with G. Cormode, A. McGregor, J. Thaler, S. Venkatasubramanian), *CCC 2015, the 30th Annual IEEE Conference on Computational Complexity*, 2015, pp. 217–243.

[C12] "Certifying Equality With Limited Interaction," (with J. Brody, R. Kondapally, D. P. Woodruff, G. Yaroslavtsev), *RANDOM-APPROX 2014, the 18th International Workshop on Randomization and Approximation Techniques in Computer Science*, 2014, pp. 545–581.

[C13] "Beyond Set Disjointness: The Communication Complexity of Finding the Intersection," (with J. Brody, R. Kondapally, D. P. Woodruff, G. Yaroslavtsev), *PODC 2014, the 33rd Annual ACM Symposium on Principles of Distributed Computing*, 2014, pp. 106–113.

[C14] "Submodular Maximization Meets Streaming: Matchings, Matroids, and More," (with S. Kale), *IPCO 2014, the 17th International Conference on Integer Programming and Combinatorial Optimization*, 2014, pp. 210–221.

[C15] "Annotations for Sparse Data Streams," (with G. Cormode, N. Goyal, J. Thaler), *SODA 2014, the 25th Annual ACM-SIAM Symposium on Discrete Algorithms*, 2014, pp. 687–706.

[C16] "A Fast Streaming Spanner Algorithm for Incrementally Constructing Sparse Roadmaps," (with W. Wang, D. Balkcom), *IROS 2013, the 26th IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2013, pp. 1257–1263.

[C17] "Information Complexity versus Corruption and Applications to Orthogonality and Gap-Hamming," (with R. Kondapally, Z. Wang), *RANDOM-APPROX 2012, the 16th International Workshop on Randomization and Approximation Techniques in Computer Science*, 2012, pp. 483–494.

[C18] "When the Cut Condition is Enough: A Complete Characterization for Multiflow Problems in Series-Parallel Networks," (with L. Fleischer, C. Weibel), *STOC 2012, the 44th Annual ACM Symposium on the Theory of Computing*, 2012, pp. 19–26.

[C19] "Everywhere-Tight Information Cost Tradeoffs for Augmented Index," (with R. Kondapally), *RANDOM-APPROX 2011, the 15th International Workshop on Randomization and Approximation Techniques in Computer Science*, 2011, pp. 448–459.

[C20] "An Optimal Lower Bound on the Communication Complexity of Gap-Hamming-Distance," (with O. Regev), *STOC 2011, the 43rd Annual ACM Symposium on the Theory of Computing*, 2011, pp. 51–60. **Invited to STOC 2011 special issue** by *SIAM Journal on Computing*.

[C21] "Information Cost Tradeoffs for Augmented Index and Streaming Language Recognition," (with G. Cormode, R. Kondapally, A. McGregor), *FOCS 2010, the 51st Annual IEEE Symposium on Foundations of Computer Science*, 2010, pp. 387–396.

[C22] "Better Gap-Hamming Lower Bounds via Better Round Elimination," (with J. Brody, O. Regev, T. Vidick, R. de Wolf), *RANDOM-APPROX 2010, the 14th International Workshop on Randomization and Approximation Techniques in Computer Science*, 2010, pp. 476–489.

[C23] "A Multi-Round Communication Lower Bound for Gap Hamming and Some Consequences," (with J. Brody), *CCC 2009, the 24th Annual IEEE Conference on Computational Complexity*, 2009, pp. 358–368.

[C24] "Annotations in Data Streams," (with G. Cormode, A. McGregor), *ICALP 2009, the 36th International Colloquium on Automata, Languages and Programming*, Lecture Notes in Computer Science **5555**, Springer-Verlag, 2009, pp. 222–234.

[C25] "Functional Monitoring Without Monotonicity," (with C. J. Arackaparambil, J. Brody), *ICALP 2009, the 36th International Colloquium on Automata, Languages and Programming*, Lecture Notes in Computer Science **5555**, Springer-Verlag, 2009, pp. 95–106.

[C26] "Embeddings, Cuts, and Flows in Topological Graphs: Lossy Invariants, Linearization, and 2-Sums," (with A. Jaffe, J. R. Lee, J. Vincent), *FOCS 2008, the 49th Annual Symposium on Foundations of Computer Science*, 2008, pp. 761–770.

[C27] "Robust Lower Bounds for Communication and Stream Computation," (with G. Cormode, A. McGregor), *STOC 2008, the 40th Annual ACM Symposium on Theory of Computing*, pp. 641–649.

[C28] "Sublinear Communication Protocols for Multi-Party Pointer Jumping and a Related Lower Bound," (with J. Brody), *STACS 2008, the 25th Annual Symposium on Theoretical Aspects of Computer Science*, 2008, pp. 145–156.

[C29] "Tight Lower Bounds for Selection in Randomly Ordered Streams," (with T. S. Jayram, M. Pǎtraşcu), *SODA 2008, the 19th Annual ACM-SIAM Symposium on Discrete Algorithms*, 2008, pp. 720–729. **Invited to SODA 2008 special issue** by *ACM Transactions on Algorithms*.

[C30] "Nearly Private Information Retrieval," (with A. Shubina), *MFCS 2007, the 32nd International Symposium on Mathematical Foundations of Computer Science*, Lecture Notes in Computer Science **4708**, Springer-Verlag, 2008, pp. 383–393.

[C31] "Lower Bounds for Multi-Player Pointer Jumping," (sole author), *CCC 2007, the 22nd Annual IEEE Conference on Computational Complexity*, 2007, pp. 33–45.

[C32] "A Near-Optimal Algorithm for Computing the Entropy of a Stream," (with G. Cormode, A. McGregor), *SODA 2007, the 18th Annual ACM-SIAM Symposium on Discrete Algorithms*, 2007, pp. 328–335.

[C33] "Attack Detection in Time Series for Recommendation Systems," (with S. Zhang, J. Ford, F. Makedon), *KDD 2006, the 12th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining*, 2006, pp. 809–814.

[C34] "A Quasi-PTAS for Unsplittable Flow on Line Graphs," (with N. Bansal, A. Epstein, B. Schieber), *STOC 2006, the 38th Annual ACM Symposium on Theory of Computing*, 2006, 721–729.

[C35] "Estimating Entropy and Entropy Norm on Data Streams," (with K. Do Ba, S. Muthukrishnan), *STACS 2006, the 23rd Annual Symposium on Theoretical Aspects of Computer Science*, Lecture Notes in Computer Science **3884**, Springer-Verlag, 2006, pp. 196–205.

[C36] "An Optimal Randomised Cell Probe Lower Bound for Approximate Nearest Neighbour Searching," (with O. Regev), *FOCS 2004, the 45th Annual Symposium on Foundations of Computer Science*, 2004, pp. 473–482. **Invited to FOCS 2004 special issue** by *SIAM Journal on Computing*.

[C37] "R^*-Histograms: Efficient Representation of Spatial Relations between Objects of Arbitrary Topology," (with Y. Wang, F. Makedon), in *Proceedings of the 12th Annual ACM International Conference on Multimedia*, 2004, pp. 356–359.

[C38] "Near-Optimal Lower Bounds on the Multi-Party Communication Complexity of Set Disjointness," (with S. Khot, X. Sun), *CCC 2003, the 18th Annual IEEE Conference on Computational Complexity*, 2003, pp. 97–107.

[C39] "Approximation Algorithms for the Unsplittable Flow Problem," (with C. Chekuri, A. Gupta, A. Kumar), *APPROX 2002, the 5th International Workshop on Approximation Algorithms for Combinatorial Optimization*, Lecture Notes in Computer Science **2462**, Springer-Verlag, 2002, pp. 51–66.

[C40] "Improved Approximation Algorithms for Resource Allocation," (with G. Calinescu, H. Karloff, Y. Rabani), *IPCO 2002, the 9th Conference on Integer Programming and Combinatorial Optimization*, Lecture Notes in Computer Science **2337**, Springer-Verlag, 2002, pp. 401-414.

[C41] "Informational Complexity and the Direct Sum Problem for Simultaneous Message Complexity," (with Y. Shi, A. Wirth, A. C.-C. Yao), *FOCS 2001, the 42nd Annual Symposium on Foundations of Computer Science*, 2001, pp. 270–278. **Recognized with 20-year Test of Time Award** at FOCS 2021.

[C42] "Improved Lower Bounds on the Randomized Complexity of Graph Properties," (with S. Khot), *ICALP 2001, the 28th International Colloquium on Automata, Languages and Programming*, Lecture Notes in Computer Science **2076**, Springer-Verlag, 2001, pp. 285–296.

[C43] "Evasiveness of Subgraph Containment and Related Properties," (with S. Khot, Y. Shi), *STACS 2001, the 18th Annual Symposium on Theoretical Aspects of Computer Science*, Lecture Notes in Computer Science **2010**, Springer-Verlag, 2001, pp. 110–120.

[C44] "A Lower Bound on the Complexity of Approximate Nearest Neighbor Searching on the Hamming Cube," (with B. Chazelle, B. Gum, A. Lvov), *STOC 1999, the 31st Annual ACM Symposium on Theory of Computing*, 1999, pp. 305–311.

C. Other Refereed and Invited Articles

[A1] "A conjecture regarding optimality of the dictator function under Hellinger distance," (with V. Anantharam, A. Bogdanov, T. S. Jayram, C. Nair), *ITA 2017, the Information Theory and Applications Workshop*, 2017.

[A2] "Communication Complexity," in *Encyclopedia of Algorithms, Second Edition*, Springer, 2016, pp. 349–357.

D. Technical Reports and Other Writings

[O1] "Counting Simplices in Hypergraph Streams," (with T. Haris), Technical Report ArXiv e-prints arXiv:2112.11016, 2021.

[O2] "The Element Extraction Problem and the Cost of Determinism and Limited Adaptivity in Linear Queries," (with M. Stoeckl), Technical Report ArXiv e-prints 2107.05810, 2021.

[O3] "Time-Space Tradeoffs for the Memory Game," (with Y. Chen), Technical Report ArXiv e-prints 1712.01330, 2017.

[O4] "Data Stream Algorithms," Lecture Notes (evolving draft), available online at `http://www.cs.dartmouth.edu/~ac/Teach/data-streams-lecnotes.pdf`.

[O5] "You Can't Do That: Lower Bounds in Computer Science," Lecture Notes (evolving draft), available online at `http://www.cs.dartmouth.edu/~ac/Teach/lower-bounds-lecnotes.pdf`.

[O6] Special Issue "Conference on Computational Complexity 2008" Guest Editors' Foreword, (with P. Beame), *Computational Complexity* **18**(2), 2009, pp. 169–170.

[O7] "Approximability of the Unsplittable Flow Problem on Trees," (with C. J. Arackaparambil, C.-C. Huang), Technical Report TR2009-642, Computer Science, Dartmouth College, 2009.

[O8] "Randomized Graph Partitioning Algorithms," Senior Thesis, IIT Bombay, 1997.

[O9] "Algorithms in Invariant Theory," Junior Thesis, IIT Bombay, 1996.

Patents and Patent Applications

[X1] "Verification Of Data Stream Computations Using Third-Party-Supplied Annotations," Patent number US8799754 B2, granted Aug 2014. `http://www.google.com/patents/US8799754`

[X2] "Validation of Priority Queue Processing," Patent number US8612649 B2, granted Dec 2013. `http://www.google.com/patents/US8612649`

Invited Talks

A. At Special-Focus Workshops and Conferences

Mar 2021   *"Linear queries with adaptivity,"*   Dagstuhl Workshop on Computational Complexity of Discrete Problems, Schloss Dagstuhl, Germany

Feb 2020   *"Let me help you understand your big graph,"*   15th International Workshop on Information Theory and Applications (ITA 2020), San Diego, CA

Dec 2019   *"Vertex Ordering Problems in Directed Graph Streams,"*   Simons Institute Foundations of Data Science Reunion workshop, U. C. Berkeley, CA

Nov 2019   *"Verifiable Stream Computation and Arthur–Merlin Communication,"*   FILOFOCS 2019 (French–Israeli Laboratory on Foundation of Computer Science) Workshop, Tel Aviv, Israel

Mar 2019   *"Space Complexity of Maximum Matching in Graph Streams,"*   Dagstuhl Workshop on Computational Complexity of Discrete Problems, Schloss Dagstuhl, Germany

Oct 2018   *"Time-Space Tradeoffs for the Memory Game,"*   Simons Institute workshop on Interactive Complexity, U. C. Berkeley, CA

Mar 2018   *"Counting Triangles and Other Substructures in Graph Streams,"*   Workshop on Data Summarization, University of Warwick, UK

Jun 2017   *"Deterministic versus Randomized Streaming: A New Technique for Communication Lower Bounds,"*   NII Shonan Workshop on Processing Big Data Streams, Shonan Village Center, Japan

Mar 2017   *"Strong Lower Bounds for Multi-Party Equality with Applications,"*   BIRS Workshop on Communication Complexity and Applications, Banff, Canada

Mar 2017   *"Organizer's Opening Remarks,"*   BIRS Workshop on Communication Complexity and Applications, Banff, Canada

Jun 2016   *"Strong Lower Bounds for Multi-Party Equality with Applications,"*   Simons Institute Information Theory Reunion workshop, U. C. Berkeley, CA

Mar 2016   *"Overview of Communication Complexity,"*   Program on Nexus of Information and Computation Theories, Institut Henri Poincaré, Paris, France

Jan 2016   *"Streaming Set Cover,"*   Sublinear Algorithms Workshop, Johns Hopkins University, Baltimore, MD

Aug 2015   *"Optimization While Streaming,"*   DIMACS Workshop on Big Data through the Lens of Sublinear Algorithms, Rutgers University, Piscataway, NJ

Apr 2015   *"Streaming Interactive Proofs and Arthur–Merlin Communication,"*   Simons Institute workshop on Information Theory in Complexity Theory and Combinatorics, U. C. Berkeley, CA

Feb 2015   *"Information Complexity of Fundamental Communication Games,"*   10th International Workshop on Information Theory and Applications (ITA 2015), San Diego, CA

Oct 2014   *"Maximum Matching (and Generalizations) on Graph Streams,"*   NII Shonan Workshop on Algorithms for Large Scale Graphs, Shonan Village Center, Japan

Aug 2014   *"Organizer's Opening Remarks,"*   BIRS Workshop on Communication Complexity and Applications, Banff, Canada

May 2014   *"Submodular Maximization in a Data Streaming Setting,"*   Sublinear Algorithms Workshop, University Residential Centre, Bertinoro, Italy

Apr 2014   *"Streaming Interactive Proofs or: How I Learned to Stop Worrying and Trust the Cloud,"*   Sublinear Algorithms Day, ICERM, Brown University, Providence, RI

Mar 2014   *"Arthur, Merlin, and Data Stream Computation,"*   Dagstuhl Workshop on Computational Complexity of Discrete Problems, Schloss Dagstuhl, Germany

Aug 2013	*"Certifying Equality With Limited Interaction,"* Workshop on Coding, Complexity and Sparsity (SPARC) 2013, University of Michigan, Ann Arbor, MI
Jun 2013	*"What Can't We Compute on Data Streams?,"* Big Data Analytics 2013, Microsoft Research, Cambridge, UK
May 2013	*"Applications of information complexity I,"* Tutorial at workshop on Information Complexity and Appliations, STOC 2013, Palo Alto, CA
Feb 2013	*"Certifying Equality With Limited Interaction,"* 8th International Workshop on Information Theory and Applications (ITA 2013), San Diego, CA
Aug 2012	*"The Gap-Hamming-Distance Story,"* Workshop on Coding, Complexity and Sparsity 2012, University of Michigan, Ann Arbor, MI
Jul 2012	*"Why data stream researchers should learn Talagrand's inequality,"* Workshop on Algorithms for Data Streams 2012, Technische Universität Dortmund, Germany
Feb 2012	*"Everywhere-tight information cost tradeoffs for augmented index,"* 7th International Workshop on Information Theory and Applications (ITA 2012), San Diego, CA
Jun 2011	*"The Information Complexity Paradigm,"* Workshop on Synergies in Lower Bounds, MADALGO, Aarhus University, Aarhus, Denmark
May 2011	*"Gap-Hamming-Distance: the Journey to an Optimal Lower Bound,"* Sublinear Algorithms Workshop, University Residential Centre, Bertinoro, Italy
Jan 2011	*"Information cost tradeoffs for augmented index and streaming language recognition,"* 6th International Workshop on Information Theory and Applications (ITA 2011), San Diego, CA
Aug 2010	*"An optimal lower bound for the Gap-Hamming-Distance problem,"* ICM 2010 Satellite Conference On Algebraic and Probabilistic Aspects of Combinatorics and Computing, I.I.Sc., Bangalore, India
Jan 2010	*"Better Gap-Hamming Lower Bounds via Better Round Elimination,"* 5th International Workshop on Information Theory and Applications (ITA 2010), San Diego, CA
Dec 2009	*"Round Elimination Methods for Data Stream Lower Bounds,"* Workshop on Algorithms for Processing Massive Data Sets (WAPMDS), IIT Kanpur, India
Mar 2009	*"Lower Bounds for Gap-Hamming-Distance and Consequences for Data Stream Algorithms,"* DIMACS/DyDAn Workshop on Streaming, Coding, and Compressive Sensing, Rutgers University, Piscataway, NJ
Feb 2009	*"Functional Monitoring Without Monotonicity,"* 4th International Workshop on Information Theory and Applications (ITA 2009), San Diego, CA
Jan 2009	*"Cell Probe Lower Bounds for Approximate Nearest Neighbour Searching,"* BIRS Workshop on Mathematics of String Spaces and Algorithmic Applications, Banff, Canada
Aug 2008	*"Robust Communication Complexity and Random-Order Data Streams,"* Workshop on Sublinear Algorithms, Schloss Dagstuhl, Germany
Dec 2006	*"Estimating Entropy (and its Friends) on Data Streams,"* Workshop on Algorithms for Data Streams, IIT Kanpur, India
Aug 2006	*"Unsplittable Flows in Line and Ring Networks,"* 19th International Symposium on Mathematical Programming, Rio de Janeiro, Brazil
Jun 2006	*"Estimating Entropy and Entropy Norm on Data Streams,"* Workshop on Space-Conscious Algorithms, University of Bologna Residential Center, Bertinoro, Italy

B. Other Invited Talks

Oct 2019	*"Streaming Verification of Graph Computations via Graph Structure,"* Theory of Computing Seminar, Harvard University, Cambridge, MA

Jun 2019	*"Graph coloring via degeneracy in streaming and other space-conscious models,"* Theory Seminar, School of Electrical Engineering and Computer Science, KTH Royal Institute of Technology, Stockholm, Sweden
Nov 2017	*"Time-Space Tradeoffs for the Memory Game,"* Theory Seminar, Department of Computer Science, University of Massachusetts, Amherst, MA
May 2016	*"Big Data, Communication Games, and an Inverse-Square Law,"* Computer Science colloquium, University of Warwick, UK
Mar 2016	*"Big Data, Communication Games, and an Inverse-Square Law,"* Computer Science Colloquium, Ashoka University, Delhi
Mar 2015	*"Verifiable Stream Computation and Arthur-–Merlin Communication,"* Seminar at Simons Institute for the Theory of Computing, University of California, Berkeley, CA
Feb 2014	*"Streaming Interactive Proofs or: How I Learned to Stop Worrying and Trust the Cloud,"* Seminar at Microsoft Research, Bangalore, India
Feb 2014	*"A Tutorial on Information Complexity Through Its Applications,"* Algorithms & Complexity seminar, Department of Computer Science and Automation, Indian Institute of Science, Bangalore, India
Jan 2014	*"Online and Streaming Interactive Proofs,"* Department seminar, Department of Electrical Communication Engineering, Indian Institute of Science, Bangalore, India
Jan 2014	*"Information Complexity and the Set Intersection Problem,"* Department seminar, Advanced Computing and Microelectronics Unit, Indian Statistical Institute, Kolkata, India
Nov 2013	*"Certifying Equality With Limited Interaction,"* Google, Mountain View, CA
Mar 2013	*"Certifying Equality With Limited Interaction,"* Princeton Seminars in Theoretical Computer Science, Princeton, NJ
Oct 2012	*"The Gap-Hamming-Distance Story,"* Theory Seminar, Department of Computer Science, Carnegie Mellon University, Pittsburgh, PA
Mar 2012	*"Communication Games and Massive Data,"* Dartmouth CS prospective student visit day, Dartmouth College, Hanover, NH
Jan 2012	*"Dubious Data Structures and Epochal Streaming Algorithms,"* Theory Seminar, Brown University, Providence, RI
Nov 2011	*"Information Complexity: A Paradigm for Proving Lower Bounds,"* Department of Mathematics Colloquium, Dartmouth College, Hanover, NH
Feb 2011	*"An optimal lower bound for the Gap-Hamming-Distance problem,"* AT&T Labs Research, Florham Park, NJ
Feb 2011	*"Information Cost Tradeoffs for Augmented Index and Streaming Language Recognition"* Theoretical Computer Science and Discrete Mathematics (CSDM) Seminar, Institute for Advanced Study, Princeton, NJ
Sep 2010	*"Information Cost Tradeoffs for Augmented Index and Streaming Language Recognition,"* Seminar at Laboratoire de Recherche en Informatique (LRI), Paris, France
Aug 2010	*"Information Cost Tradeoffs for Augmented Index and Streaming Language Recognition,"* Department of Computer Science and Automation, Indian Institute of Science, Bangalore, India
Aug 2010	*"An optimal lower bound for the Gap-Hamming-Distance problem,"* Seminar at Centre for Quantum Technologies, National University of Singapore, Singapore
Jul 2010	*"Information Cost Tradeoffs for Augmented Index and Streaming Language Recognition,"* Seminar at Microsoft Research India, Bangalore, India
Jul 2010	*"Information Complexity: A Paradigm for Proving Lower Bounds,"* Seminar at Microsoft Research India, Bangalore, India
Jul 2010	*"Multi-pass Data Stream Lower Bounds via Round Elimination,"* Theory Seminar at Columbia University, New York, NY

Jul 2009	*"Multi-pass Data Stream Lower Bounds via Round Elimination,"* CS Seminar at Technische Universität Dortmund, Germany
May 2009	*"Multi-pass Data Stream Lower Bounds via Round Elimination,"* Colloquium at Microsoft Research New England, Cambridge, MA
Oct 2008	*"Functional Monitoring Without Monotonicity,"* Microsoft Research Silicon Valley, Mountain View, CA
Feb 2008	*"Robust Communication Complexity and Applications,"* Theory Seminar, University of Texas, Austin, TX
Sep 2007	*"The Information Complexity Paradigm,"* Dartmouth CS Research Symposium, Dartmouth College, Hanover, NH
Jul 2007	*"Multi-Player Pointer Jumping: Lower Bounds and Why They Matter,"* AT&T Labs Research, Florham Park, NJ
Jun 2007	*"Multi-Player Pointer Jumping: Lower Bounds and Why They Matter,"* TOC-Talk, IBM Almaden Research Center, San Jose, CA
Apr 2007	*"The Information Complexity Paradigm,"* Intel Research Lab, Seattle, WA
Mar 2007	*"Lower Bounds for Multi-Player Pointer Jumping,"* Theory Seminar, Department of Computing Science, Simon Fraser University, Vancouver, Canada
Jan 2007	*"Estimating Entropy (and its Friends) on Data Streams,"* Theory Seminar, Department of Computer Science and Engineering, University of Washington, Seattle, WA
Nov 2006	*"Estimating Entropy (and its Friends) on Data Streams,"* Theory of Computation Seminar, School of Computer Science, McGill University, Montréal, Canada
Oct 2006	*"Estimating Entropy (and its Friends) on Data Streams,"* Theory of Computation Seminar, IBM T. J. Watson Research Center, Yorktown Heights, NY
May 2006	*"Estimating Entropy and Entropy Norm on Data Streams,"* Theory of Computation Seminar, Toyota Technological Institute, Chicago, IL
Jul 2005	*"A Surprising Upper Bound for High-Dimensional Approximate Nearest Neighbour Search,"* Theory of Computation Seminar, IBM T. J. Watson Research Center, Yorktown Heights, NY
Jun 2005	*"Lower Bounds via Information Theory and an Application to the Approximate Nearest Neighbour Search Problem,"* School of Computer Science and Software Engineering Seminar Series, Monash University, Australia
Jun 2005	*"A Surprising Upper Bound for High-Dimensional Approximate Nearest Neighbour Search,"* Computer Science & Software Engineering Seminar, The University of Melbourne, Australia
May 2005	*"Information Theory and Complexity,"* Faculty Presentation to Graduate Students, Department of Computer Science, Dartmouth College, Hanover, NH
Dec 2004	*"Two Applications of Topology to Impossibility Results in Computer Science,"* Mathematics Department Colloquium, Indian Institute of Science, Bangalore, India
Oct 2004	*"Quantum Computation: A Biased Guided Tour,"* Quantum Information Science Workshop, Department of Physics, Dartmouth College, Hanover, NH
Aug 2004	*"Tight Bounds for Approximate Nearest Neighbour Search,"* TOC-Talk, IBM Almaden Research Center, San Jose, CA
Mar 2004	*"Tight Bounds for Approximate Nearest Neighbour Search,"* DIMACS Theory Seminar, Rutgers University, Piscataway, NJ
Dec 2003	*"Tight Bounds for Approximate Nearest Neighbour Search,"* U. C. Berkeley Theory Seminar, Berkeley, CA
Nov 2003	*"Tight Bounds for Approximate Nearest Neighbour Search,"* University of Michigan Theory Seminar, Ann Arbor, MI
Nov 2003	*"Tight Bounds for Approximate Nearest Neighbour Search,"* Princeton Seminars in Theoretical Computer Science, Princeton, NJ

Mar 2003	*"Lower Bounds for Multi-Party Set Disjointness,"* IAS Combinatorics and Complexity Theory Seminar, Princeton, NJ
Feb 2003	*"Informational complexity and lower bounds in communication complexity,"* CUNY Graduate Center Combinatorics Seminar, New York, NY
Nov 2002	*"A Lower Bound for Approximate Nearest Neighbor Searching,"* IAS Combinatorics and Complexity Theory Seminar, Princeton, NJ
Nov 2002	*"Informational Complexity and Lower Bounds in Communication Complexity,"* DIMACS, Rutgers University, Piscataway, NJ
Apr 2002	*"Minor-closed Graph Properties are Evasive,"* CUNY Graduate Center Combinatorics Seminar, New York, NY
Nov 2001	*"Informational Complexity and the Direct Sum Problem for Simultaneous Message Complexity,"* Institute for Advanced Study (IAS), Princeton, NJ
Jan 2001	*"Evasiveness of Subgraph Containment and Related Properties,"* Department of Computer Science and Automation, Indian Institute of Science, Bangalore, India
Aug 2000	*"Improved Approximation Algorithms for Bandwidth Allocation,"* AT&T Labs Research, Florham Park, NJ

Advising

A.   Theses Supervised as Primary Advisor

- Suman Kalyan Bera, Ph.D., Mar 2019

- Sagar Kale, Ph.D., Nov 2017

- Pei Wu, M.S., Nov 2015

- Zhenghui Wang, M.S., Jun 2013

- Ranganath Kondapally, Ph.D., Dec 2012

- Chrisil Arackaparambil, Ph.D., Oct 2011

- Joshua Brody, Ph.D., Nov 2010

- Anna Shubina, Ph.D., Nov 2007

- Themistoklis Haris '21, Senior Honors thesis (earning High Honors)

- Yining Chen '18, Senior Honors thesis (earning High Honors)

- Matthew Jin '17, Senior Honors thesis (earning High Honors)

- Matthew Harding '13, Senior Honors thesis (earning High Honors)

- Melissa Queen '13, Senior thesis student (earning Honors)

- Edward Talmage '12, Senior Honors thesis (earning Honors)

- Karn Seth '10, Senior Honors thesis (earning High Honors)

- William Henderson-Frost '08, Senior Honors thesis (earning High Honors)

- David Blinn '06, Senior Honors thesis (earning High Honors)

- Marco Adelfio '05, Senior Honors thesis (earning High Honors)

B. Non-Thesis Undergraduate Research Supervised

- Benjamin Cape '22, Presidential scholar

- Themistoklis Haris '21, Lovelace scholar

- Themistoklis Haris '21, Presidential scholar

- Yining Chen '18, Sophomore Science scholar

- Matthew Jin '17, Presidential scholar

- Ajay Kannan '15, Presidential scholar

- Owen Worley '09, Presidential scholar

- Khanh Do Ba '06, Dean of Faculty scholar and summer research student

C. Advisory Committee Membership not as Primary Advisor

- **External thesis reviewer** for the following Ph.D. candidates

    - Gopinath Mishra (Indian Statistical Institute, Kolkata, India)
    - Pavel Dvořák (Charles University, Prague)
    - Susanna de Rezende (KTH Royal Institute of Technology, Sweden)
    - Florent Urrutia (Université Paris Diderot, France)
    - Ved Prakash (National University of Singapore)
    - Hao Song (Tsinghua University, China)

- Member on Ph.D. thesis committee of Maryam Negahbani, Benjamin Priest (Thayer School of Engineering, Dartmouth), Shahrzad Haddadan, Umang Bhaskar, Chien-Chung Huang, Sheng Zhang, David Wagner, Heng Huang, Yuhang Wang, and Zhifeng Wang

- Member on M.S. thesis committee of John J. Thomas (as co-advisor), Anne Loomis, Sahil Surana, and Fabio Drucker

D. Current Students

- Prantar Ghosh, Ph.D. candidate

- Manuel Stoeckl, Ph.D. candidate

E. Other Advising

- Keith Carlson, Ph.D. student (advised 2012–2013)

- Anup Joshi, Ph.D. student (advised 2014–2015)

Teaching

A. Dartmouth College

- Instructor, CS39 (Theory of Computation), Winter 2022.
- Instructor, CS31 (Algorithms), Spring 2021.
- Instructor, CS49/249 (Information Theory in Computer Science), Winter 2021.
- Instructor, CS35/135 (Data Stream Algorithms), Spring 2020.
- Instructor, CS30 (Discrete Mathematics in Computer Science), Fall 2019.
- Instructor, CS39 (Theory of Computation), Spring 2019.
- Instructor CS49/149 (Communication Complexity), Winter 2019.
- Instructor, CS39 (Theory of Computation), Spring 2018.
- Instructor, CS30 (Discrete Mathematics in Computer Science), Winter 2018.
- Instructor, CS31 (Algorithms), Spring 2017.
- Instructor, CS30 (Discrete Mathematics in Computer Science), Winter 2017.
- Instructor, CS49/149 (Lower Bounds in Computer Science), Winter 2017.
- Instructor, CS231 (Advanced Algorithms), Spring 2016.
- Instructor, CS35/135 (Data Stream Algorithms), Fall 2015.
- Instructor, CS30 (Discrete Mathematics in Computer Science), Fall 2015.
- Instructor, CS39 (Theory of Computation), Winter 2015.
- Instructor, CS30 (Discrete Mathematics in Computer Science), Fall 2014.
- Instructor, CS49/149 (Communication Protocols and Complexity), Fall 2014.
- Instructor, CS39 (Theory of Computation), Spring 2014.
- Instructor, CS31 (Algorithms), Spring 2013.
- Instructor, CS239 (Computational Complexity), Spring 2013.
- Instructor, CS39 (Theory of Computation), Winter 2013.
- Instructor, CS39 (Theory of Computation), Winter 2012.
- Instructor, CS49/149 (Data Stream Algorithms), Fall 2011.
- Instructor, CS239 (Computational Complexity), Fall 2011.
- Instructor, CS109 (Theory of Computation, Graduate Level), Spring 2011.
- Instructor, CS33 (Information Systems), Spring 2011.
- Instructor, CS106 (Numerical Linear Algebra), Fall 2010.
- Instructor, CS109 (Theory of Computation, Graduate Level), Spring 2011.
- Instructor, CS33 (Information Systems), Spring 2009.
- Instructor, CS85/185 (Data Stream Algorithms), Fall 2009.
- Instructor, CS109 (Theory of Computation, Graduate Level), Spring 2009.
- Instructor, CS33 (Information Systems), Spring 2009.
- Instructor, CS39 (Theory of Computation), Winter 2009.
- Instructor, CS85/185 (Lower Bounds in Computer Science), Spring 2008.
- Instructor, CS109 (Theory of Computation, Graduate Level), Spring 2008.

- Instructor, CS39 (Theory of Computation), Fall 2007.
- Instructor, CS39 (Theory of Computation), Fall 2006.
- Instructor, CS85/185 (Information, Communication & Complexity Theory), Winter 2006.
- Instructor, CS19 (Discrete Mathematics in Computer Science), Winter 2006.
- Instructor, CS39 (Theory of Computation), Fall 2005.
- Instructor, CS105 (Algorithms and Data Structures), Winter 2005.
- Instructor, CS39 (Theory of Computation), Winter 2005.
- Instructor, CS39 (Theory of Computation), Fall 2004.
- Instructor, CS21 (Discrete Mathematics in Computer Science), Winter 2004.
- Instructor, CS85/185 (Lower Bounds in Computer Science), Fall 2003.

B. Princeton University

- Preceptor, COS226 (Algorithms and Data Structures), Spring 2000.
- Teaching Assistant, COS423 (Theory of Algorithms), Spring 1999.
- Teaching Assistant, COS423 (Theory of Algorithms), Spring 1998.
- Teaching Assistant, COS487 (Theory of Computation), Fall 1997.
- Teaching Assistant, COS341 (Discrete Mathematics), Fall 1997.

C. IIT Bombay

- Teaching Assistant, CS101 (Computer Programming and Utilization), Fall 1995.

Professional Service

A. Editorial

- Associate Editor of *Information Processing Letters*, 2019–present
- Program Committee (TPC) chair for RANDOM 2022, the 26th International Workshop on Randomization and Computation
- Program Committee (TPC) member for the following conferences:
  - FOCS 2022, the 63rd IEEE Symposium on Foundations of Computer Science
  - RANDOM 2021, the 25th International Workshop on Randomization and Computation
  - WADS 2019, the 16th International Workshop on Algorithms and Data Structures
  - SODA 2019, the 30th Annual ACM-SIAM Symposium on Discrete Algorithms
  - ISIT 2018, the IEEE International Symposium on Information Theory
  - ESA 2017, the 25th Annual European Symposium on Algorithms
  - CCC 2017, the 32nd International Conference on Computational Complexity
  - SODA 2015, the 26th Annual ACM-SIAM Symposium on Discrete Algorithms
  - RANDOM 2013, the 17th International Workshop on Randomization and Computation

- STOC 2013, the 45th ACM Symposium on the Theory of Computing
- CATS 2013, the 19th edition of Computing: the Australasian Theory Symposium
- TAMC 2011, the 8th Annual Conference on Theory and Applications of Models of Computation
- FSTTCS 2010, the 30th IARCS Annual Conference on Foundations of Software Technology and Theoretical Computer Science
- COCOON 2010, the 16th Annual International Computing and Combinatorics Conference
- FOCS 2009, the 50th IEEE Symposium on Foundations of Computer Science
- CCC 2008, the 23rd IEEE Conference on Computational Complexity

- Co-Editor of *Computational Complexity*, special issue for CCC 2008.

B. Service to Professional Organizations

- Secretary, Board of Trustees of the Computational Complexity Foundation, 2021–2024.

- Executive Committee member and Publicity Chair for ACM SIGACT, 2010–2017.

C. Other

- Organizer of the following invitation-based research workshops.

  - Weeklong workshop *Communication Complexity and Applications III*, (jointly with M. Göös, G. Kol, and T. Pitassi) at Banff International Research Station (BIRS), to be held during July 2022 (awarded). `http://www.birs.ca/events/2017/5-day-workshops/22w5124`
  - Weeklong workshop: *Communication Complexity and Applications II*, (jointly with F. Ergun, A. McGregor, and A. Rao) at Banff International Research Station (BIRS), March 2017. `http://www.birs.ca/events/2017/5-day-workshops/17w5147`
  - Two-week workshop: *Inference Problems*, (jointly with A. McGregor, D. P. Woodruff, H. Pfister, and D. Shah) at Institut Henri Poincaré, Paris, France. March 2016. `http://csnexus.info/inference.html`
  - Weeklong workshop: *Communication Complexity and Applications*, (jointly with F. Ergun, A. McGregor, and A. Rao) at Banff International Research Station (BIRS), August 2014. `http://www.birs.ca/events/2014/5-day-workshops/14w5164`

- Computer Science Honors examiner for Swarthmore College, 2016, 2017, 2020.

- NSF panelist and reviewer of research proposals on multiple occasions (2005–present) in the fields of Theory of Computing and Data-Intensive Computing.

- Reviewer of research proposals for W. M. Keck Foundation; Israel Science Foundation (ISF); U.S.–Israel Binational Science Foundation (BSF); Natural Sciences and Engineering Research Council of Canada (NSERC).

- Referee for the following journals, most on multiple occasions: *ACM Transactions on Algorithms (TALG), ACM Transactions on Computation Theory (ToCT), Algorithmica, Combinatorica, Computational Complexity, IEEE Transactions on Information Theory, Information Processing Letters (IPL), Integration—the VLSI Journal, Journal of the ACM (JACM), Journal of Computer and System Sciences (JCSS), Journal of Parallel and Distributed Computing (JPDC), Machine Learning, Random Structures and Algorithms, SIAM Journal on Computing (SICOMP), Theoretical Computer Science, Theory of Computing.*

- Referee for the following conferences (primarily in theoretical computer science) over several years: FOCS, STOC, SODA, CCC, STACS, ICALP, RANDOM/APPROX, IPCO, COLT, PODS, ISIT, ESA, SPAA, FSTTCS, COCOON, TAMC.

- Invited judge for ENVISION by WiSTEM (high school proposal-writing competition organized by Women in STEM), 2020–2021; 2021–2022.

- Member of ACM; Former member of MPS.

University Activities

Dartmouth College

- Committee on Admissions and Financial Aid (Summer 2017 – present)

- Committee on Standards (Summer 2012 – Spring 2014)

- Committee on Instruction (Arts & Sciences faculty) (Winter 2006)

- Early House Faculty for South House

Dartmouth College, Computer Science Department

- Founder and organizer, Dartmouth CS Theory seminar series (2004–07, 08–09, 12–13, 17–present)

- Ph.D. Program Director (2017–2021)

- Ph.D. Admissions Chair (2007–08, 2012–13, 2014–15)

- Ph.D. Admissions Committee (2003–04, 2004–05, 2011–12, 2016–17, 2017–18)

- Colloquium Chair (2004–05, 2005–06, Fall 2006)

- Curriculum Committee Chair (2004–05, 2005–06, 2009–10, 2014–15, 2021–present)

- Curriculum Committee (2003–04, 2008–09, 2010–13, 2014–15)

- Faculty Search Chair (2015–2016)

- Faculty Search Committee (2011–12, 2015–2016, 2019–2020)

- Kemeny Prize Committee (2003–04)

- Library Representative (2003–04, 2007–12, 2014–2017)

Princeton University, Computer Science Department

- Founder and organizer, "Let's Talk Theory" student seminar series (1999–2000)

Outreach Activities

- Organized activity sessions for students at the Ray Elementary School (Hanover, NH)

  - "Hour of Code" event for 4th grade students, January 2019.
  - "Hour of Code" event for 4th grade students, December 2017.
  - "Hour of Code" event for 5th grade students, December 2016 (joint with Dan Rockmore).