Michael A. Bender

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Employment

John L. Hennessy Endowed Professorship. Dept of Computer Science, Stony Brook University, 2023–.

Professor and David R. Smith Leading Scholar. Dept of Computer Science, Stony Brook University, 2016–2023.

Professor. Dept of Computer Science, Stony Brook University, 2015–.

Founder and Chief Scientist. Tokutek, Inc. 2012–2015.

Founder and Chief Technical Officer. Tokutek, Inc. 2010–2012.

Founder and VP of Engineering. Tokutek, Inc. 2006–2010.

Visiting Research Fellow. Dept of Computer Science, Kings College London, 2004–2005.

Associate Professor. Dept of Computer Science, Stony Brook University, 2004–2015.

Visiting Scientist. Computer Science and AI Laboratory, Massachusetts Institute of Technology, 2003–2004.

Assistant Professor. Dept of Computer Science, Stony Brook University, 1998–2004.

Research Associate. Bell Laboratories, Lucent Technologies, Murray Hill, summer 1996.

Education

Harvard University. PhD 1998 and SM 1995 in Computer Science.
Advisor: Michael O. Rabin. Thesis: *New Algorithms and Metrics for Scheduling.*

Ecole Normale Supérieure de Lyon. Diplôme d'Etudes Approfondies (DEA) d'Informatique Fondamentale, Magistère d'Informatique et de Modelisation. *Mention bien*, 1993.

Harvard University. AB *Magna Cum Laude* with Highest Honors in Applied Mathematics, 1992.

Teaching Awards and Other SBU Honors

1. TREES Award (Teachers Rated Excellent Educators by their Students), 2023.
2. David R. Smith Leading Scholar in Computer Science, 2016.
3. SUNY Chancellor's Award for Excellence in Teaching, Stony Brook University, 2015.

4. Major Contributions to Graduate Education and Research, CS Dept, Stony Brook, 2012.
5. Undergraduate Teaching Award, CS Dept, Stony Brook, 2006.
6. Dean's Award for Excellence in Graduate Teaching, College of Engineering and Applied Sciences, Stony Brook, 2005.
7. Graduate Teaching Award, Dept of Computer Science, Stony Brook, 2000.

Other Honors

1. Fellow of the Institute of Electrical and Electronics Engineers (IEEE), 2026.
   For contributions to the theory of data structures and their application to storage systems.
   https://www.computer.org/press-room/2026-class-fellows.
2. SPAA Distinguished Paper Award. ACM Symposium on Parallelism in Algorithms and Architectures, 2025. https://spaa.acm.org/best-paper-award/.
3. ACM SIGMOD Research Highlight Award, 2024. https://sigmod.org/research-highlight-award/
4. Fellow of the American Association for the Advancement of Science (AAAS), 2024.
   For distinguished contributions to the foundations of data structures and their applications.
   https://www.aaas.org/programs/fellows/2024-aaas-fellows.
5. PODS Best Paper Award. ACM SIGMOD-SIGACT-SIGAI Symposium on Principles of Database Systems, 2024.
6. Fellow of the European Association of Theoretical Computer Science (EATCS), 2023.
   For fundamental contributions in bringing theoretical computer science techniques to practical problems and systems.
   https://eatcs.org/index.php/eatcs-fellows.
7. IEEE Senior Member (IEEE), 2023.
8. ASPLOS Distinguished Paper Award. ACM International Conference on Architectural Support for Programming Languages and Operating Systems, 2023.
9. SPAA Outstanding Paper Award. ACM Symposium on Parallelism in Algorithms and Architectures, 2022.
10. ACM Distinguished Member, 2020.
11. USENIX FAST Best Paper Runner-up. USENIX Conference on File and Storage Technologies, 2018.
12. USENIX FAST Best Paper Award. USENIX Conference on File and Storage Technologies, 2016.
13. USENIX FAST Best Paper Runner-up. USENIX Conference on File and Storage Technologies, 2015.
14. IPDPS Best Paper Award. IEEE International Parallel & Distributed Processing Symposium, 2015.
15. ACM Senior Member, 2014.
16. Imre Simon Test-of-Time Award. Latin American Theoretical INformatics Symposium, 2012.

17. R&D 100 Award, 2006.
    In recognition of the 100 most technologically significant products introduced into the marketplace over the past year. The award was for the Compute Process Allocator, used on supercomputers around the world. My collaborators are three researchers at Sandia National Labs and one researcher at the University of Illinois.
18. PODS Best Newcomer Award. ACM SIGMOD-SIGACT-SIGAI Symposium on Principles of Database Systems, 2006.
19. Rotary Fellowship at the Ecole Normale Supérieure de Lyon, France, 1992–1993.

Steering Committees

1. ACM Symposium on Parallelism in Algorithms and Architectures (SPAA), 2020-present. **Steering Commitee Chair**, starting 2024.
2. SIAM Activity Group on Applied and Computational Discrete Algorithms (ACDA). 2022–2024. **Vice Chair**.
3. SIAM Symposium on Simplicity in Algorithms (SOSA), 2017-present. **Founding member**.
4. SIAM Symposium on Algorithmic Principles of Computer Systems (APOCS), 2019-present. **Founding member**.
5. Latin American Theoretical Informatics Symposium (LATIN), 2018–present.
6. European Symposium on Algorithms (ESA), 2018–2021.

Selected Conference Organization

1. Dagstuhl Seminar 25191: Adaptive and Scalable Data Structures. May 2025. https://www.dagstuhl.de/en/seminars/seminar-calendar/seminar-details/25191.
2. Co-organizer. Centre CNRS "Paul-Langevin", Aussois, France. New Challenges in Scheduling Theory, May 2024. https://aussois2024.imag.fr.
3. Co-organizer. Centre CNRS "Paul-Langevin", Aussois, France. 1st ACDA Workshop in Aussois, September 2022.
4. Co-organizer. Centre CNRS "Paul-Langevin", Aussois, France. New Challenges in Scheduling Theory, May 2022.
5. Program Committee Chair (joint with J. Gilbert) 1st SIAM Conference on Applied and Computational Discrete Algorithms (ACDA), 2021. **Founding Program Committee Chair.**
6. Program Committee Chair Track B. 27th Annual European Symposium on Algorithms (ESA), 2019.
7. Program Committee Chair (joint with M. Mosteiro). 13th Latin American Symposium on Theoretical INformatics (LATIN), 2018.
8. Co-organizer. 44th ACM Symposium on Theory of Computing (STOC), Tutorial on Algorithms for Memory-Sensitive Computing, 2012.
9. Co-organizer. Centre CNRS "La Villa Clythia", Frejus, France. New Challenges in Scheduling Theory, 2010.
10. Program Committee Chair. 21st ACM Symposium on Parallelism in Algorithms and Architectures (SPAA), 2009.
11. Co-organizer. CIRM Center at Marseille-Luminy: New Challenges in Scheduling Theory, 2008.

12. Publicity Chair. Symposium on Parallelism in Algorithms and Architectures (SPAA), 2000–2007.
13. Co-organizer. CIRM Center at Marseille-Luminy: Scheduling Algorithms for New Emerging Applications, 2006.
14. Co-organizer. Dagstuhl Seminar 04301: Cache-Oblivious and Cache-Aware Algorithms, 2004.

Editorial Boards

1. *Algorithmica*, 2023–present.
2. *Journal of Computer and System Sciences*, 2016–present.
3. *Journal of Discrete Algorithms*, 2004–2014.

Other Editorships

1. Guest Editor. *Journal of Scheduling* Special Issue on New Challenges in Scheduling Theory, 2008–2014.
2. Guest Editor. *Theory of Computing Systems* Special Issue on SPAA 2009.
3. Guest Editor. *Journal of Scheduling* Special Issue on Scheduling Algorithms for New Emerging Applications, 2006-2008.
4. Guest Editor. *Journal of Algorithms* Special Issue on SODA 2003.

Program Committees

1. 10th Annual Fall Workshop on Computational Geometry 2000.
2. Genetic and Evolutionary Computation Conference (GECCO) 2001.
3. 1st International Workshop on Efficient Algorithms (WEA) 2001.
4. Latin American Theoretical Informatics (LATIN) 2002.
5. Genetic and Evolutionary Computation Conference (GECCO) 2002.
6. 5th Workshop on Algorithm Engineering and Experiments (ALENEX) 2003.
7. 14th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA) 2003,
8. 10th International Conference on High Performance Computing (HiPC) 2003.
9. Latin American Theoretical Informatics (LATIN) 2004.
10. 3rd International Conference on FUN with Algorithms (FUN) 2004.
11. 11th International Conference on High Performance Computing (HiPC) 2004.
12. Genetic and Evolutionary Computation Conference (GECCO) 2004.
13. 15th Annual International Symposium on Algorithms and Computation (ISAAC) 2004.
14. 10th Annual International Computing and Combinatorics Conference (COCOON) 2004.
15. 13th Annual European Symposium on Algorithms (ESA) 2005.
16. 2nd Multidisciplinary International Conference on Scheduling (MISTA) 2005.
17. 12th International Conference on High Performance Computing (HiPC) 2005 (**Vice-Chair, Algorithms Track**).
18. 11th European Conference on Parallel Processing (Euro-Par) 2005 (**Vice-Chair, Scheduling and Load Balancing**).
19. 20th IEEE International Parallel and Distributed Processing Symposium (IPDPS) 2006.
20. 12th International Conference on Parallel and Distributed Systems (ICPADS), 2006.
21. 18th ACM Symposium on Parallelism in Algorithms and Architectures (SPAA) 2006.

22. 13th String Processing and Information Retrieval (SPIRE) 2006.
23. 21st IEEE International Parallel and Distributed Processing Symposium (IPDPS) 2007.
24. Workshop on Programming Models for Grid Computing (PMGC) 2007.
25. Latin American Theoretical Informatics (LATIN) 2008.
26. 9th Workshop on Algorithm Engineering and Experiments (ALENEX) 2008.
27. 35th International Colloquium on Automata, Languages, and Programming (ICALP) 2008.
28. 4th International Workshop on Algorithmic Aspects of Wireless Sensor Networks (ALGOSENSORS) 2008.
29. 21st ACM Symposium on Parallelism in Algorithms and Architectures (SPAA) 2009. (**Program Committee Chair**)
30. 24th IEEE International Parallel and Distributed Processing Symposium (IPDPS) 2010.
31. 29th Annual ACM SIGACT-SIGOPS Symposium on Principles of Distributed Computing (PODC) 2010.
32. 17th International Conference on High Performance Computing (HiPC) 2010.
33. 31st International Conference on Distributed Computing Systems (ICDCS) 2011 (**Vice-Chair, Algorithms Track**).
34. 19th Annual European Symposium on Algorithms, Engineering and Applications Track (ESA) 2011.
35. 10th Latin American Theoretical Informatics (LATIN) 2012.
36. 27th IEEE International Parallel and Distributed Processing Symposium (IPDPS) 2013.
37. 25th ACM Symposium on Parallelism in Algorithms and Architectures (SPAA) 2013.
38. ASE/IEEE International Conference on Big Data, 2013.
39. 11th Latin American Theoretical Informatics (LATIN) 2014.
40. 21st International Conference on High Performance Computing (HiPC) 2014.
41. Sixth Workshop on Massive Data Algorithmics (MASSIVE) 2014.
42. 26th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA) 2015.
43. 12th Latin American Theoretical Informatics (LATIN) 2016.
44. 28th ACM Symposium on Parallelism in Algorithms and Architectures (SPAA) 2016.
45. Eighth International Conference on Fun with Algorithms (FUN) 2016.
46. 36th ACM SIGACT-SIGOPS Symposium on the Principles of Distributed Computing (PODC) 2017.
47. 46th International Conference on Parallel Processing (ICPP) 2017. **Algorithms Track Co-Chair**.
48. 13th Latin American Symposium on Theoretical INformatics (LATIN) 2018. **Program Committee Chair**.
49. 30th ACM Symposium on Parallelism in Algorithms and Architectures (SPAA) 2018.
50. 38th ACM SIGMOD-SIGACT-SIGAI Symposium on Principles of Database Systems (PODS) 2019.
51. 27th Annual European Symposium on Algorithms (Track B) 2019. **Program Committee Chair.**
52. The 23rd International Conference on Principles of Distributed Systems (OPODIS) 2019.
53. 32nd ACM Symposium on Parallelism in Algorithms and Architectures (SPAA) 2020.
54. 1st SIAM Conference on Applied and Computational Discrete Algorithms (ACDA) 2021. **Program Committee Chair**.
55. 50th International Conference on Parallel Processing (ICPP) 2021.

56. 35th International Symposium on Distributed Computing (DISC) 2021.
57. 30th Annual European Symposium on Algorithms (ESA Track S) 2022.
58. 37th IEEE International Parallel & Distributed Processing Symposium (IPDPS) 2023
59. 2nd SIAM Conference on Applied and Computational Discrete Algorithms (ACDA) 2023.
60. 1st Workshop on Highlights of Parallel Computing (HOPC) 2023.

Keynote Talks

1. "Filters." 27th International Symposium on String Processing and Information Retrieval (SPIRE). Orlando, FL. October 2020.

2. "The Algorithmics of Write Optimization." 21st International Symposium on Computer Architecture and High Performance Computing (SBAC-PAD). Campo Grande, Brazil. October 2019.

3. "Cup Emptying Games and I/O Scheduling." 14th Workshop on Models and Algorithms for Planning and Scheduling (MAPSP). Renesse, Netherlands. June 2019.

4. "The Algorithmics of Write Optimization." 33rd IEEE International Parallel & Distributed Processing Symposium (IPDPS). Vancouver, CA. May 2018.

5. "TBD: **T**hree **B**ackoff **D**ilemmas." 10th Workshop on the Foundations of Mobile Computing (FOMC). Philadelphia, PA. August 2014.

6. "Gaps in My Education: Mailboxes, Libraries, and How to Insert into an Array." Annual Case Lecture at St. Louis University. St. Louis, MO. **Graduation and Award-Ceremony Talk.** April 2010.

7. "From Streaming B-trees to Tokutek: How a Theoretician Learned to be VP of Engineering." 8th International Symposium on Experimental Algorithms (SEA). Dortmund, Germany. June 2009.

8. "An Adaptive Packed-Memory Array." Encuentro Mexicano de Computación (ENC). San Luis Potosí, MX. September 2006.

Selected Patents

1. United States Patent 6,112,221. A System and Method for Scheduling Webservers with a Quality-of-Service Guarantee for Each User. Michael A. Bender, Soumen Chakrabarti, and Shanmugavelayutham Muthukrishnan. Awarded: August 29, 2000.

2. United States Patent 7,565,657. Allocating Application to Group of Consecutive Processors in Fault-Tolerant Deadlock-Free Routing Path Defined by Routers Obeying Same Rules for Path Selection. Vitus Leung, Michael A. Bender, David Bunde, and Cynthia Phillips. Awarded: July 21, 2009.

3. United States Patent 8,185,551. Disk-Resident Streaming Dictionary. Bradley C. Kuszmaul, Michael A. Bender, and Martin Farach-Colton. Awarded: May 21, 2012.

4. United States Patent 8,489,638. Disk-Resident Streaming Dictionary. Bradley C. Kuszmaul, Michael A. Bender, and Martin Farach-Colton. July 16, 2013.

5. United States Patent 8,996,563. High-performance streaming dictionary. Michael A. Bender, Martin Farach-Colton, Yonatan R. Fogel, Zardosht Kasheff, Bradley C. Kuszmaul, Vincenzo Liberatore, Barry Perlman, Rich Prohaska, and David S. Wells. Awarded: March 31, 2015.

Grants

1. co-PI: Algorithms in Support of Scalable Tactical Imagery eXploitation. Subcontract from ISX Corporation on a grant from DARPA. $40,000 (with E. Arkin, AMS, and J. Mitchell, AMS). Award effective: 8/1/1999–12/25/2000.

2. co-PI: Algorithms in Support of Pheromone Robotics. Subcontract from HRL Laboratories on a grant from DARPA. $171,062 (with E. Arkin, AMS, and J. Mitchell, AMS). Award effective: 9/1/1999–9/1/2002.

3. co-PI: EIA 0112849 ITR/SY(CISE): Cache-Oblivious Data Structures. National Science Foundation (with L. Arge, Duke, and E. Demaine, MIT). $449,571 ($161,529 SBU portion). Award effective: 9/1/2001–8/31/2004.

4. PI: Algorithmic Support for Cplant Scheduling. Sandia National Laboratories. $46,132 (with E. Arkin, AMS). Award effective: 6/11/2001–9/28/2001.

5. co-PI: CCF 0103059 Nanoscale Single Electron Switching Arrays for Self-Evolving Neuromorphic Networks. National Science Foundation. $599,980 (with K. Likarev, Physics, J. Lukens, Physics, and A. Mayr, Physics). Award effective: 7/1/2001–6/30/2003.

6. PI: CCF 0208670 Data Structures and Algorithms for Maintaining Data Locality. National Science Foundation. $149,937. Award effective: 7/15/2002–6/30/2005.

7. PI: Algorithmic Support for Cplant Scheduling. Sandia National Laboratories. $20,351. Award effective: 6/11/2002–9/20/2002.

8. PI: Algorithmic Support for Cplant Scheduling. Sandia National Laboratories. $34,680. Award effective: 5/1/2003–1/1/2003.

9. co-PI: ACI 0324974 ITR: Transactions Everywhere. National Science Foundation (with B. Kuszmaul, MIT, and C. Leiserson, MIT). $650,000 ($100,000 SBU portion). Award effective: 9/2003–8/2004.

10. PI: CCF 0540897 Collaborative Research: High-Performance Data Access through Memory Abstraction. National Science Foundation (with M. Farach-Colton, Rutgers). $399,033 ($199,836 SBU portion). Award effective: 8/1/2006–7/31/2009.

11. co-PI: CNS 0627645 Authenticating Reality. National Science Foundation (with R. Johnson and D. Samaras, CS Dept). $350,000. Award effective: 10/1/2006–9/30/2009.

12. PI: CCF 0621439 HECURA: Collaborative Research: Techniques for Streaming File Systems and Databases. National Science Foundation (with M. Farach-Colton, Rutgers). $341,400, ($141,378 SBU portion). Award effective: 8/1/2006–1/31/2008.

13. PI: Techniques for Massive-Data Collection in Wireless and Sensor Networks. Center of Excellence in Wireless and Information Technology (CEWIT). $10,000. Award effective: 1/2007–12/2007.

14. Participating Scientist: NSF IIP-0740298 SBIR Phase I: A Storage Engine for High-Volume Data (M. Farach-Colton, PI and B. Kuszmaul, Participating Scientist). National Science Foundation. $100,000. Award effective: 1/1/2008–12/31/2008.

15. co-PI: Algorithms in Support of Fractal Tree Databases. Tokutek, Inc./Sensor CAT (with J. Mitchell, AMS). $33,512.50. Award effective: 9/1/2009–2/1/2010.

16. co-PI: Continuation of Algorithms in Support of Fractal Tree Databases. Tokutek, Inc./Sensor CAT (with J. Mitchell, AMS). $57,962.50. Award effective: 1/1/2010–7/1/2010.

17. Participating Scientist: NSF IIP-0945687 SBIR Phase I: A Multithreaded Storage Engine using Highly-Concurrent Fractal Trees (with B. Kuszmaul, PI, and M. Farach-Colton, Participating Scientist). National Science Foundation. $150,000. Award effective: 1/1/10–12/31/10.

18. Participating Scientist: NSF IIP-1058565 SBIR Phase II: A Multithreaded Storage Engine Using Highly-Concurrent Fractal Trees (with B. Kuszmaul, PI, and M. Farach-Colton, Participating Scientist). National Science Foundation. $500,000. Award effective: 2/1/2011-1/31/2013.

19. PI: CCF 0634793 Collaborative Research: Adversarial Contention Resolution. National Science Foundation (with M. Farach-Colton). $299,499 ($166,999 SBU portion). Award effective: 3/1/2007–2/28/2011.

20. co-PI: DOE DE-FG02-08ER25853 Efficient Databases for HPC Clusters. DOE Small Business Grant (with M. Farach-Colton and B. Kuszmaul). $1,750,000. Award effective: 2008–2011.

21. PI: CCF 0937822 HECURA: Collaborative: Multidimensional and String Indexes for Streaming Data. National Science Foundation (with M. Farach-Colton, Rutgers, and C. E. Leiserson and B. Kuszmaul, MIT). 1,000,000 ($199,993 SBU portion). Award effective: 9/1/2009–8/31/2013.

22. PI: CCF 1114809 AF: Small: Collaborative Research: Algorithms for Reallocation Problems. National Science Foundation (with M. Farach-Colton, Rutgers). $499,989 ($249,999 SBU portion). Award effective: 7/1/2011–6/30/2014.

23. PI: CCF 1217708 AF: SMALL: Collaborative Research: Data Structures for Parallel Algorithms. National Science Foundation (with K. Agrawal, Wash U, and J. T. Fineman, Georgetown). $449,939 ($138,999 SBU portion). Award effective: 8/1/2012–7/31/2015.

24. PI: IIS 1247726 BIGDATA: Mid-Scale: DCM: Collaborative Research: Eliminating the Data Ingestion Bottleneck in Big Data Applications. National Science Foundation (with M. Farach-Colton, Rutgers, and R. Johnson, SBU). $1,200,000, ($800,000 SBU portion). Award effective: 2/1/2013–1/31/2017.

25. co-PI: IIS 1251137 BIGDATA: Small: DCM: Collaborative Research: An Efficient, Versatile, Scalable, and Portable Storage System for Scientific Data Containers. National Science Foundation (with E. Zadok and R. Johnson, SBU, L. Shrira, Brandeis, and W. Benger, LSU). $746,289 ($444,267 SBU portion). Award effective: 7/1/2013–6/30/2017.

26. co-PI: SPIR: High Performance Lock Trees for Concurrent Data Structures. Tokutek (with R. Zhao, SBU). $15,128. Award effective: 6/1/2013–1/1/2014.

27. PI: CNS 1408695 CSR: Medium: Collaborative Research: FTFS: A Read/Write-optimized Fractal Tree File System. National Science Foundation (with Rob Johnson and Don Porter, SBU, Martin Farach-Colton, Rutgers, Bradley C. Kuszmaul, MIT). $1,103,993 ($623,993 SBU Portion). Award effective: 7/1/2014-6/30/2018.

28. PI: CNS 1755615 CSR: Medium: Collaborative Research: FTFS: A Read/Write-optimized Fractal Tree File System. National Science Foundation (with Rob Johnson and Don Porter, SBU, Martin Farach-Colton, Rutgers, Bradley C. Kuszmaul, MIT). $1,103,993 ($50,754 SBU Portion). Award effective: 9/1/2016-9/30/2018.

29. co-PI: CCF 1439084 XPS: FULL: CCA: Collaborative Research: Cache-Adaptive Algorithms: How to Share Core among Many Cores. National Science Foundation (with Rob Johnson and Rezaul A Chowdhury, SBU). $800,000. Award effective: 12/1/2014–11/30/2019.

30. PI: Advanced Data Structures for Improved Cyber Resilience and Awareness in Untrusted Environments. Sandia National Laboratories (with Rob Johnson, SBU). $331,506. Award effective: 6/9/2015–9/30/2017.

31. PI: CCF 1617618. AF: Small: Collaborative Research: Maintaining Order. National Science Foundation (with Jeremy Fineman, Georgetown) $449,999 ($210,296 SBU portion). Award effective: 9/1/2016–8/31/2019.

32. co-PI: CCF 1725543 SPX: Collaborative Research: Harnessing the Power of High-Bandwidth Memory via Provably Efficient Parallel Algorithms. National Science Foundation (with Michael Ferdman, SBU and Benjamin Mosely, CMU). $750,000 ($500,000 SBU portion). Award effective: 9/15/2017–8/31/2021.

33. PI: CCF-BSF: 1716252 AF: Small: Collaborative Research: The Dictionary Problem Considered. National Science Foundation (with Martin Farach-Colton, Rutgers and Rob Johnson, VMware Research SBU). $500,000 ($250,000 SBU portion). Award effective: 9/1/2017–8/31/2020.

34. co-PI: CSR: 1763680 Medium: Approximate Membership Query Data Structures in Computational Biology and Storage. National Science Foundation (with Rob Patro, SBU and Mike Ferdman, SBU). $1,199,996. Award effective: 08/15/2018–07/31/2022.

35. PI: CNS 1938709 ABR: CSR: Medium: Collaborative Research: FTFS: A Read/Write Optimized Fractal Tree File System. National Science Foundation (with Martin Farach-Colton, Rutgers; William Jannen, Williams; Don Porter, UNC; Jun Yuan, Pace). $1,487,961 ($1,199,996 SBU portion with subcontracts to Pace, UNC, and Williams). Award effective: 10/01/2019–09/30/2022.

36. PI: CCF 2106827 Collaborative Research: AF: Medium: Adventures in Flatland: Algorithms for Modern Memories. National Science Foundation (with Kunal Agrawal, Washington University; Martin Farach-Colton, Rutgers; Jeremy Fineman, Georgetown). $1,199,658 ($300,000 SBU portion). Award effective: 06/01/2021–05/31/2025.

37. PI: CCF 2118830 Collaborative Research: PPoSS: Planning: Efficient Address Translation with Formal Guarantees for Data-Center-Scale Applications. National Science Foundation (with Martin Farach-Colton, Rutgers; Sudarsun Kannan, Rutgers; Don Porter, Rutgers). $249,998 ($62,500 SBU portion). Award effective: 10/01/2021–09/30/2022.

38. PI: CSR: Medium: Approximate Membership Query Data Structure in Computational Biology and Storage. National Science Foundation, subcontract from U Maryland. (with Mike Ferdman, SBU). $255,380. Award effective: 10/01/2022–08/31/2023.

39. PI: CCF 2247577. NSF-BSF: Collaborative Research: AF: Small: Algorithmic Performance through History Independence. National Science Foundation (with Martin Farach-Colton, Rutgers; Rotem Oshman, Tel Aviv). $599,975 ($299,975 SBU portion). Award effective: 05/01/2023–04/30/2026.

Refereed Journal Publications

1. Michael A. Bender and Howard A. Stone. An Integral Equation Approach to the Study of the Steady-State Current at Surface Microelectrodes. *Journal of Electroanalytical Chemistry and Interfacial Chemistry*, 351:29–55, 1993.

2. Michael A. Bender, Michel Gastaldo, and Michel Morvan. Parallel Interval Order Recognition and Construction of Interval Representations. *Theoretical Computer Science*, 143(1):73–91, 1995.

3. Yonatan Aumann, Michael A. Bender, and Lisa Zhang. Efficient Execution of Nondeterministic Parallel Programs on Asynchronous Systems. *Information and Computation*, 139(1):1–16, 1997.

4. Michael A. Bender and Chandra Chekuri. Performance Guarantees for the TSP with a Parameterized Triangle Inequality. *Information Processing Letters*, 73:17-21, 2000.

5. Mie Sato, Ingmar Bitter, Michael A. Bender, Arie E. Kaufman, and Masayuki Nakajima. Tree-Structure Extraction Algorithm for Accurate and Robust Skeletons (in Japanese). *The Journal of the Institute of Image Information and Television Engineers*, 2000.

6. Chandra Chekuri and Michael A. Bender. An Efficient Approximation Algorithm for Minimizing Makespan on Uniformly Related Machines. *Journal of Algorithms*, 41:212–224, 2001.

7. Michael A. Bender and Dana Ron. Testing Properties of Directed Graphs: Acyclicity and Connectivity. *Random Structures and Algorithms*, 20(2): 184–205, 2002.

8. Matthew Andrews, Michael A. Bender, and Lisa Zhang. New Algorithms for the Disk Scheduling Problem. *Algorithmica*, 32(2): 277–301, 2002.

9. Michael A. Bender and Michael O. Rabin. Online Scheduling of Parallel Programs on Heterogeneous Systems with Applications to Cilk. *Theory of Computing Systems*, 35: 289–304, 2002. Special Issue on *SPAA '00*.

10. Michael A. Bender, Antonio Fernández, Dana Ron, Amit Sahai, and Salil P. Vadhan. The Power of a Pebble: Exploring and Mapping Directed Graphs. *Information and Computation*, 176(1):1–21, 2002.

11. Esther M. Arkin, Michael A. Bender, Joseph S. B. Mitchell, and Steven Skiena. The Lazy Bureaucrat Scheduling Problem. *Information and Computation*, 184(1):129–146, 2003.

12. Carl M. Bender, Michael A. Bender, Erik D. Demaine, and Sándor P. Fekete. What is the Optimal Shape of a City? *Journal of Physics A: Mathematical and General*, 37:147–159, 2004.
Journal of Physics A #1 Most Downloaded Article in 2004.

13. Michael A. Bender and Martin Farach-Colton. The Level Ancestor Problem Simplified. *Theoretical Computer Science—Special Issue on LATIN 2002*, 321(1):5–12, 2004.

14. Esther M. Arkin, Michael A. Bender, Erik D. Demaine, Martin L. Demaine, Joseph S. B. Mitchell, Saurabh Sethia, and Steven Skiena. When Can You Fold a Map? *Computational Geometry: Theory and Applications (CGTA)*, 29(1):23–46, 2004. Special issue of selected papers from the 10th Annual Fall Workshop on Computational Geometry, 2000.

15. Marcelo O. Sztainberg, Esther M. Arkin, Michael A. Bender, and Joseph S. B. Mitchell. Theoretical and Experimental Analysis of Heuristics for the Freeze-Tag Robot Awakening Problem. *IEEE Transactions on Robotics and Automation*, 20(4):691–701, 2004.

16. Michael A. Bender, S. Muthukrishnan, and Rajmohan Rajaraman. Approximation Algorithms for Average Stretch Scheduling. *Journal of Scheduling*, 7(3):195–222, 2004. Special Issue on *SODA 02*.

17. Michael A. Bender, Ziyang Duan, John Iacono, and Jing Wu. A Locality-Preserving Cache-Oblivious Dynamic Dictionary. *Journal of Algorithms*, 3(2):115-136, 2004.
Journal of Algorithms Hottest Article, #1 Most Downloaded in 2004.

18. Michael A. Bender, Saurabh Sethia, and Steven Skiena. Data Structures for Maintaining Set Partitions. *Random Structures and Algorithms*, 25:43–67, 2004.

19. Yonatan Aumann and Michael A. Bender. Efficient Low-Contention Asynchronous Consensus with the Value-Oblivious Adversary Scheduler. *Distributed Computing*, 17(3): 191–207, 2005.

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207. Michael A. Bender, Alex Conway, Daniel DeLayo, Martin Farach-Colton, Jaehyun Han, Linfeng He, Rob Johnson, Sudarsun Kannan, William Kuszmaul, Donald E. Porter, and Evan West. Don't Melt Your Cache: Low-Associativity with Heat-Sink. *Proc. 37th ACM Symposium on Parallelism in Algorithms and Architectures (SPAA)*, pages 555–565, August 2025. **Distinguished Paper Award.** https://doi.org/10.1145/3694906.3743303.

208. Michael A. Bender, William Kuszmaul, Elaine Shi, and Rose Silver. History-Independent Load Balancing. *Proc. 37th ACM-SIAM Symposium on Discrete Algorithms (SODA)*, pages 1097–1127, January 2026. https://doi.org/10.1137/1.9781611978971.44.

209. Michael A. Bender, Guy E. Blelloch, Martín Farach-Colton, Yang Hu, Rob Johnson, Rotem Oshman, and Renfei Zhou. Fast Concurrent Primitives Despite Contention. *Proc. 38th ACM Symposium on Parallelism in Algorithms and Architectures (SPAA)*, July 2026. Accepted.

210. Michael A. Bender, Philip Bille, Martín Farach-Colton, Jeremy Fineman, Inge Li Gørtz, Michael T. Goodrich, Hanna Komlós, Bradley C. Kuszmaul, William Kuszmaul, Rose Silver, Todd Veldhuizen, and Renfei Zhou. The Local/Global Disk Problem: How to Use Shared High-Bandwidth. *Proc. 38th ACM Symposium on Parallelism in Algorithms and Architectures (SPAA)*, July 2026. Accepted.

Technical Magazine Articles

211. Michael A. Bender, Jeremy T. Fineman, Mahnush Movahedi, Jared Saia, Varsha Dani, Seth Gilbert, Seth Pettie, and Maxwell Young. Resource-Competitive Algorithms. *SIGACT News*, 46(3): 57–71, 2015. https://doi.org/10.1145/2818936.2818949.

212. Michael Bender, Martin Farach-Colton, William Jannen, Rob Johnson, Bradley C. Kuszmaul, Donald E. Porter, Jun Yuan, and Yang Zhan. An Introduction to B^ε-Trees and Write-Optimization. *:login; magazine*, 40(5): 22–28, October 2015. https://www.usenix.org/publications/login/oct15/bender.

213. Alex Conway, Ainesh Bakshi, Yizheng Jiao, Yang Zhan, Michael A. Bender, William Jannen, Rob Johnson, Bradley C. Kuszmaul, Donald E. Porter, Jun Yuan, and Martin Farach-Colton. How to Fragment Your File System. *:login; magazine*, 42(2), 2017. https://www.usenix.org/publications/login/summer2017/conway.

214. Yang Zhan, Alexander Conway, Yizheng Jiao, Nirjhar Mukherjee, Ian Groombridge, Michael A. Bender, Martín Farach-Colton, William Jannen, Rob Johnson, Donald E. Porter, and Jun Yuan. How to Not Copy Files. *:login; magazine*, 45(3), 2020. https://www.usenix.org/publications/login/fall2020/zhan.

All Presentations

1. **Washington University.** St. Louis, MO. Jan 1995.
   The Power of Team Exploration: Two Robots Can Learn Unlabeled Directed Graphs.

2. **SPAA 96.** Padua, Italy. June 1996.
   Efficient Execution of Nondeterministic Parallel Programs on Asynchronous Systems.

3. **ICALP 96.** Paderborn, Germany. July 1996.
   Efficient Asynchronous Consensus with the Value-Oblivious Adversary Scheduler.

4. **Summer Institute on Parallel Discrete Algorithms.** Halifax, Nova Scotia. July 1996.
   Efficient Asynchronous Consensus with the Value-Oblivious Adversary Scheduler.

5. **FOCS 96.** Burlington, VT. Oct 1996.
   Fault-Tolerant Data Structures.

6. **Bell Labs.** Murray Hill, NJ. Sep 1997.
   Flow and Stretch Metrics for Scheduling Continuous Job Streams.

7. **Carnegie Mellon.** Pittsburgh, PA. Nov 1997.
   The Power of a Pebble: Exploring and Mapping Directed Graphs.

8. **DIMACS Workshop on Randomization Methods in Algorithm Design.**
   Princeton, NJ. Dec 1997.
   Efficient Asynchronous Consensus with the Value-Oblivious Adversary Scheduler.

9. **Michigan State.** East Lansing, MI. Feb 1998.
   New Algorithms and Metrics for Scheduling.

10. **Arizona State.** Phoenix, AZ. Feb 1998.
    New Algorithms and Metrics for Scheduling.

11. **Stony Brook University.** Stony Brook, NY. Mar 1998.
    New Algorithms and Metrics for Scheduling.

12. **Polytechnic University.** Brooklyn, NY. Mar 1998.
    New Algorithms and Metrics for Scheduling.

13. **Bell Labs, Lucent Technologies.** Murray Hill, NJ. Mar 1998.
    New Algorithms and Metrics for Scheduling.

14. **Case Western Reserve University.** Cleveland, OH. Mar 1998.
    New Algorithms and Metrics for Scheduling.

15. **U of Arizona.** Tucson, AZ. Apr 1998.
    New Algorithms and Metrics for Scheduling.

16. **U of Houston.** Houston, TX. Apr 1998.
    New Algorithms and Metrics for Scheduling.

17. **AT&T Research.** Florham Park, NJ. Apr 1998.
    New Algorithms and Metrics for Scheduling.

18. **U of New Mexico.** Albuquerque, NM. Apr 1998.
    New Algorithms and Metrics for Scheduling.

19. **STOC 98.** Dallas, TX. May 1998.
    The Power of a Pebble: Exploring and Mapping Directed Graphs.

20. **U of Maryland.** College Park, MD. Mar 1999.
    New Algorithms and Metrics for Scheduling Job Streams.

21. **Escuela de Ciencias Informáticas 99.** U of Buenos Aires, Argentina. July 1999.
    Estructuras de Datos Avanzados (Advanced Data Structures).
    Week-long Course.

22. **WADS 99.** Vancouver, Canada. Aug 1999.
    General Multiprocessor Task Scheduling: Approximate Solutions in Linear Time.
    Conference Talk for K. Jansen and L. Porkolab.

23. **WADS 99.** Vancouver, Canada. Aug 1999.
Performance Guarantees for the TSP with a Parameterized Triangle Inequality.

24. **WADS 99.** Vancouver, Canada. Aug 1999.
The Lazy Bureaucrat Scheduling Problem.

25. **Dagstuhl Seminar: Scheduling in Computer and Manufacturing Systems.**
Germany. Oct 1999.
Flow and Stretch Metrics for Scheduling Continuous Job Streams.

26. **Stony Brook University.** Stony Brook, NY. Feb 2000.
Algorithms for Asynchronous Consensus. Operations Research Seminar.

27. **Stony Brook University.** Stony Brook, NY. Mar 2000.
Algorithms for Graph Exploration. Operations Research Seminar.

28. **LATIN 2000.** Punta del Este, Uruguay. Apr 2000.
The LCA Problem Revisited.

29. **SPAA 2000.** Bar Harbor, ME. July 2000.
Scheduling Cilk Multithreaded Computations on Processors of Different Speeds.

30. **Dagstuhl Seminar: Experimental Algorithms.** Germany Sep 2000.
Cache-Oblivious Algorithms and Data Structures.

31. **DIMACS Workshop on Sublinear Algorithms.** Princeton, NJ Oct 2000.
Cache-Oblivious Algorithms and Data Structures.

32. **MARS/DR/SDR DARPA PI meeting.** Knoxville, TN. Oct 2000.
Algorithms in Support of Pheromone Robotics.

33. **FOCS 2000.** Redondo Beach, CA. Nov 2000.
Cache-Oblivious B-Trees.

34. **Yale.** New Haven, CT. Mar 2001.
Cache-Oblivious Data Structures.

35. **Stony Brook Univ.** Stony Brook, NY. Apr 2001.
Cache-Oblivious B-Trees. Operations Research Seminar.

36. **Brookhaven National Labs.** Brookhaven, NY. Mar 2001.
Cache-Oblivious Algorithms.

37. **McGill.** Montréal, Canada. Apr 2001.
The Power of a Pebble: Exploring and Mapping Directed Graphs.

38. **IBM TJ Watson.** Yorktown Heights, NY. May 2001.
Cache-Oblivious Algorithms.

39. **MARS/DR/SDR DARPA PI meeting.** Nashville, TN. July 2001.
Algorithms in Support of Pheromone Robotics.

40. **First Arizona Workshop on Algorithms.** Tempe, AZ. Nov 2001.
Cache-Oblivious Data Structures and Algorithms.

41. **SODA 2002.** San Franciso, CA. Jan 2002.
The Freeze-Tag Problem: How to Wake Up a Swarm of Robots.

42. **Dagstuhl Seminar on Data Structures.** Germany. Feb 2002.
Two Simplified Algorithms for Maintaining Order in a Linked List.

43. **Brown.** Providence, RI. May 2002.
Cache-Oblivious Data Structures.

44. **Dagstuhl Seminar: Scheduling in Computer and Manufacturing Systems.** Germany. June 2002.
Scheduling and Resource Allocation in Commodity Supercomputers.

45. **Sandia Petaflops Systems Workshop.** Albuquerque, NM. June 2002.
Cache-Oblivious Algorithms.

46. **Bell Labs.** Murray Hill, NJ. July 2002.
Cache-Oblivious Data Structures.

47. **AT&T Research.** Florham Park, NJ. July 2002.
Cache-Oblivious Data Structures.

48. **Sun Microsystems Inc.** Burlington, MA. Aug 2002.
Cache-Oblivious Data Structures.

49. **ESA 2002.** Rome, Italy. Sep 2002.
Efficient Tree Layout in a Multilevel Memory Hierarchy.

50. **ESA 2002.** Rome, Italy. Sep 2002.
Two Simplified Algorithms for Maintaining Order in a List.

51. **Polytechnic University.** Brooklyn, NY. Oct 2002.
Cache-Oblivious Data Structures.

52. **MIT.** Cambridge, MA. Oct 2002.
Cache-Oblivious Data Structures.

53. **Workshop on Models and Algorithms for Planning and Scheduling Problems (MAPSP 2003).** Aussois, France. Apr 2003.
The Freeze-Tag Problem: How to Awaken a Swarm of Robots.

54. **SPAA 2003.** San Diego, CA. May 2003.
Improved Approximation Algorithms for the Freeze-Tag Problem.

55. **SoCG 2003.** San Diego, CA. May 2003.
Online Dispersion Algorithms for Swarms of Robots.

56. **SODA 2004.** New Orleans, LA. Jan 2004.
Improved Bounds on Sorting with Length-Weighted Reversals.

57. **SIAM Conference on Parallel Processing for Scientific Computing (PP04).** San Francisco, CA. Feb 2004.
Communication-Aware Processor Allocation for Supercomputers.

58. **SIAM Workshop Combinatorial Scientific Computing.** San Francisco, CA. Feb 2004.
Cache-Oblivious Data Structures and Algorithms.

59. **Boston University.** Boston, Massachusetts. Mar 2004.
Cache-Oblivious B-Trees.

60. **Harvard.** Cambridge, Massachusetts. Mar 2004.
Cache-Oblivious Searching.

61. **NSF Next Generation Software Program – PI Workshop at IPDPS.** Sante Fe, NM. Apr 2004.
Worst-Case Analysis of Randomized Backoff.

62. **Dagstuhl Seminar: Scheduling in Computer and Manufacturing Systems.** Germany. Apr 2004.
Scheduling Algorithms for Transactional Memory.

63. **Northeastern.** Boston, Massachusetts. Apr 2004.
Cache-Oblivious B-Trees.

64. **FUN with Algorithms.** Elba, Italy. May 2004.
Insertion Sort is $O(N \log N)$.

65. **Dagstuhl Seminar: Cache-Oblivious and Cache-Aware Algorithms.** Germany. July 2004.
Efficient Tree Layouts.

66. **Sun Microsystems Laboratories.** Burlington, Massachusetts. Aug 2004.
Concurrent Cache-Oblivious Search Trees.

67. **3rd International Conference on Parallel Computing Systems.** Colima, Mexico. Sep 2004.
Communication-Aware Processor Allocation for Supercomputers.
Plenary Talk.

68. **U of Southampton.** Southampton, UK. Oct 2004.
Communication-Aware Processor Allocation for Supercomputers.

69. **U of Durham.** Durham, UK. Oct 2004.
Cache-Oblivious Data Structures.

70. **Kings College London.** London, UK. Oct 2004.
Communication-Aware Processor Allocation for Supercomputers.

71. **U of Nottingham.** Nottingham, UK. Oct 2004.
Communication-Aware Processor Allocation for Supercomputers.

72. **U of Edinburgh.** Edinburgh, UK. Nov 2004.
Cache-Oblivious Data Structures.

73. **U of Braunschweig.** Braunschweig, Germany. Nov 2004.
Cache-Oblivious Data Structures.

74. **U of Hertfordshire.** Hatfield, UK. Nov 2004.
Cache-Oblivious Data Structures.

75. **U of Leeds.** Leeds, UK. Nov 2004.
Communication-Aware Processor Allocation for Supercomputers.

76. **Imperial College.** London, UK. Dec 2004.
Cache-Oblivious Data Structures.

77. **Université de Grenoble.** Grenoble, France. Dec 2004.
Communication-Aware Processor Allocation for Supercomputers (in French).

78. **5th Haifa Workshop on Interdisciplinary Applications of Graph Theory, Combinatorics and Computing.** Haifa, Israel. May 2005.
Adversarial Contention Resolution.
Plenary Talk.

79. **U of Patras.** Patras, Greece. June 2005.
Cache-Oblivious B-trees.

80. **6to. Congreso Int. de las Ciencias Computacionales.** Colima, Mexico. Sep 2005.
Cache-Oblivious Data Structures (in Spanish).
Plenary Talk.

81. **Fall Workshop on Computational Geometry.** Philadelphia, PA. Nov 2005.
What is the Optimal Shape of a Blob?

82. **York U.** Toronto, CA. Nov 2005.
Adversarial Contention Resolution.

83. **U of Toronto.** Toronto, CA. Nov 2005.
Cache-Oblivious B-trees.

84. **SIAM Conference on Parallel Processing for Scientific Computing (PP06).** San Francisco, CA. Feb 2006.
Cache-Oblivious Algorithms for Massive Data.

85. **Dagstuhl Seminar on Data Structures.** Germany. Feb 2006.
An Adaptive Packed-Memory Array.

86. **Workshop on Parallelism in Algorithms and Architectures.** U Maryland, MD. May 2006.
An Adaptive Packed-Memory Array.

87. **CIRM Workshop: Scheduling Algorithms for New Emerging Applications.** Luminy, France. June 2006.
Scheduling Algorithms for Procrastinators.

88. **Université de Grenoble.** Grenoble, France. June 2006.
An Adaptive Packed-Memory Array (in French).

89. **PODS 2006.** Chicago, IL. June 2006.
An Adaptive Packed-Memory Array. **Award Presentation.**

90. **High-End Computing File Systems and I/O (HEC FSIO) 2006.** Arlington, VA. Aug 2006.
Streaming B-trees.

91. **Encuentro Mexicano de Computación (ENC 2006).** San Luis Potosí, MX. Sep 2006.
An Adaptive Packed-Memory Array.
Plenary Talk.

92. **Dagstuhl Seminar on Robot Navigation.** Germany. Oct 2006.
The Snowblower Problem.

93. **Los Alamos National Laboratories.** Los Alamos, NM. Jan 2007.
An Adaptive Packed-Memory Array.

94. **Columbia.** New York, NY. Apr 2007.
An Adaptive Packed-Memory Array.

95. **Oberwolfach Workshop on Algorithm Engineering.** Germany. June 2007.
Engineering B-trees and Cache-Oblivious B-trees on Real Memory Hierarchies (Ignorance is Bliss)

96. **SPAA 2007.** San Diego, CA. June 2007.
Scheduling DAGs on Asynchronous Processors.

97. **U of Buenos Aires.** Buenos Aires, Argentina. Oct 2007.
An Adaptive Packed-Memory Array (in Spanish).

98. **Washington Univ.** St. Louis, MO. Dec 2007.
An Adaptive Packed-Memory Array.

99. **Dagstuhl Seminar on Data Structures.** Germany. Feb 2008.
Cache-Oblivious Streaming B-Trees.

100. **High-End Computing File Systems and I/O (HEC FSIO).** Arlington, VA. Aug 2008.
Techniques for Streaming File Systems and Databases.

101. **IBM TJ Watson.** Yorktown Heights, NY. Nov 2008.
Cache-Oblivious Streaming B-trees.

102. **Quantum Mechanics in the Complex Domain.** St. Louis, MO. Mar 2009.
An Adaptive Packed-Memory Array.

103. **NSF Workshop on the Science of Power Management.** Arlington, VA. Apr 2009.
An Adaptive Packed-Memory Array. **Spotlight Talk.**

104. **The Graduate Center, CUNY.** New York, NY. May 2009.
An Adaptive Packed-Memory Array.

105. **Symposium on Experimental Algorithms (SEA).** Dortmund, Germany. June 2009.
From Streaming B-trees to Tokutek: How a Theoretician Learned to be VP of Engineering.
Keynote Talk.

106. **IBM Supercomputing Professional Interest Community.** IBM TJ Watson. Aug 2009.
Performance of Fractal Tree Databases.

107. **Scalable Approaches to High Performance and High Productivity Computing (ScalPerf).** Bertinoro, Italy. Sep 2009.
Performance of Fractal Tree Databases.

108. **Brookhaven National Labs.** Brookhaven, NY. Feb 2010.
Performance of Fractal Tree Databases.

109. **Dagstuhl Seminar on Data Structures.** Germany. Mar 2010.
Fractal Tree Databases: Data Structures for Fun and Profit.

110. **New Topics in Distributed Algorithms.** EPFL, Switzerland. Apr 2010.
Fractal Tree Databases: Concurrency Challenges.

111. **St. Louis University.** St. Louis, MO. Apr 2010.
Performance of Fractal Tree Databases.

112. **Annual Case Lecture at St. Louis University.** St. Louis, MO. Apr 2010
Gaps in My Education: Mailboxes, Libraries, and How to Insert into an Array.
Graduation and Award-Ceremony Talk.

113. **PODS 2010.** Indianapolis, IN. June 2010.
Performance Guarantees for B-trees with Different-Size Atomic Keys.

114. **High-End Computing File Systems and I/O (HEC FSIO).** Arlington, VA. Aug 2010.
Multidimensional and String Indexes for Streaming Data.

115. **CNRS Workshop on New Challenges in Scheduling Theory.** Fréjus, France. Sep 2010.
Scheduling DAGs on Asynchronous Processors.

116. **Hofstra University.** Hempstead, NY. Sep 2010.
How to Index Massive Data Sets Quickly.

117. **Morrelly Homeland Security Center.** Bethpage, NY. Jan 2011.
How to Index Massive Data Sets Quickly.

118. **Sustainable Energy-Efficient Data Management (SEEDM).** Arlington, VA. May 2011.
How Fast Indexing Makes Databases Greener.

119. **Bertinoro Workshop on Algorithms and Data Structures (ADS).** Bertinoro, Italy. June 2011.
Don't Thrash: How to Cache Your Hash on Flash.

120. **High-End Computing File Systems and I/O (HEC FSIO).** Arlington, VA. Aug 2011.
Better Metadata Management Through Data Structures.

121. **BIRS Workshop on Probabilistic versus Deterministic Techniques for Shared Memory Computation.** Banff Centre, Canada. Feb 2012.
Asynchronous Shared-Memory Mutual Exclusion in $O(\log^2 \log n)$ RMRs.

122. **STOC Tutorial on Algorithms for Memory-Sensitive Computing.**
New York, NY. May 2012.
Tutorial. *Databases and External Memory: Indexes, Write Optimization, and Cryptosearches.*

123. **NSF Workshop on Research Directions in the Principles of Parallel Computation.**
Pittsburgh, PA. June 2012
Indexing Big Data.

124. **Dagstuhl Seminar on Database Workload Management.** Germany. July 2012.
Write-Optimized Data Structures.

125. **Dagstuhl Seminar on Database Workload Management.** Germany. July 2012.
The Procrastination Scheduling Problem. "Gong Show" Presentation.

126. **Sandia National Laboratories.** Albuquerque, NM. Aug 2012.
Indexing Massive Data Sets.

127. **6th Extremely Large Databases Conference, Workshop, and Tutorials (XLDB).**
Stanford, CA. Sep 2012.
Tutorial. *Data Structures and Algorithms for Big Databases.*

128. **NSF Center for Dynamic Data Analytics (CDDA).** Stony Brook, NY. Mar 2013.
Eliminating the Data Ingestion Bottleneck in Big Data Applications.

129. **Waterloo.** Waterloo, CA. Mar 2013.
Data Structures for Indexing Massive Data Sets. Database Seminar.

130. **White House Big Data Workshop.** White House Conference Center, Washington, DC. May 2013.
Write Optimization: the Future of Databases/File Systems. One-minute talk.

131. **CEWIT Industrial Advisory Board.** Stony Brook, NY. May 2013.
Overview of Big Data in Computer Science Department.

132. **Workshop on Algorithms and Data Structures (ADS).** Bertinoro, Italy. June 2013.
Cache-Adaptive Algorithms.

133. **7th Extremely Large Databases Conference, Workshop, and Tutorials (XLDB).** Stanford, CA. Sep 2013.
Tutorial. *Data Structures and Algorithms for Big Databases.*

134. **Rutgers.** New Brunswick, NJ. Oct 2013.
Write Optimization.

135. **SUNY Conference (SUNYCON): Building a Smarter University.** Oct 2013.
Research and Education on Big Data.

136. **Two Sigma.** New York, NY. Nov 2013.
Read-Write Optimization.

137. **CEWIT.** Stony Brook, NY. Nov 2013.
Overview of Big Data in Computer Science Department.

138. **New Challenges in Scheduling Theory.** Aussois, France. Mar 2014.
Reallocation Problems in Scheduling.

139. **XLDB Healthcare Workshop.** Stony Brook, NY. May 2014.
Indexing Big Data.

140. **Symposium on Principles of Database Systems (PODS).** Snowbird, UT. June 2014.
Cost-Oblivious Storage Reallocation.

141. **Workshop on Randomized Algorithms for Distributed Computing and Networks (RADICON)** Rennes, France TBD: **T**hree **B**ackoff **D**ilemmas. July 2014.

142. **10th Workshop on the Foundations of Mobile Computing (FOMC).** Philadelphia, PA. TBD: **T**hree **B**ackoff **D**ilemmas. Aug 2014.
Keynote Talk.

143. **Workshop on Streaming Graph Algorithms (WSGA).** Albuquerque, NM. Oct 2014.
Indexing Big Data

144. **BigData Techcon.** San Francisco, CA. Oct 2014.
Tutorial. *Data Structures and Algorithms for Big Databases.*

145. **Lawrence Berkeley Laboratories.** Berkeley, CA. Feb 2015.
Indexing Big Data

146. **Workshop on Algorithms and Data Structures (ADS).** Bertinoro, Italy. June 2015.
Three Backoff Dilemmas.

147. **NoSQL Now.** San Jose, CA. Aug 2015.
Tutorial. *Write-Optimized Data Structures for Databases.*

148. **Georgia Tech.** Atlanta, GA. Sep 2015.
Write-Optimization.

149. **U Pennsylvania.** Philadelphia, PA. Nov 2015.
TBA: Three Backoff Dilemmas.

150. **U Connecticut.** Storrs, CT March 2016.
Write-Optimization.

151. **New Challenges in Scheduling Theory.** Centre CNRS "Paul Langevin", Aussois, France March 2016.
TBD: Three Backoff Dilemmas.

152. **Escuela de Ciencias Informáticas.** U Buenos Aires July 2016.
Week-long course. *Estructuras de Datos para los Sistemas de Almacenaje (Data structures for Storage Systems).*

153. **Complexity & Analysis of Distributed Algorithms.** CMO-BIRS Oaxaca, MX Nov 2016.
Three Backoff Dilemmas.

154. **Bertinoro Workshop on Algorithms and Data Structures (ADS).** Bertinoro, Italy. June 2017.
Anti-Persistence on Persistent Storage: History-Independent Sparse Tables and Dictionaries.

155. **Faculty seminar and lunch.** Stony Brook, NY January 2017.
Write Optimization.

156. **New Challenges in Scheduling Theory.** Centre CNRS "Paul Langevin", Aussois, France April 2018.
Scheduling Algorithms for Program-Committee Members.

157. **33rd IEEE IPDPS.** Vancouver, CA May 2018.
The Algorithmics of Write Optimization.
Keynote talk.

158. **Dagstuhl Seminar on Data Structures for the Cloud and External Memory Data.** Germany. Jan 2019.
Bloom Filters, Adaptivity, and the Dictionary Problem.

159. **Columbia.** New York, NY February 2019.
Bloom Filters, Adaptivity, and the Dictionary Problem.

160. **Dagstuhl Seminar on the Theoretical Foundations of Storage Systems.** Germany. Mar 2019.
Tutorial on Write Optimization.

161. **Bertinoro Workshop on Algorithms and Data Structures (ADS).** Bertinoro, Italy. June 2019.
Bloom Filters, Adaptivity, and the Dictionary Problem.

162. **Workshop on Models and Algorithms for Planning and Scheduling (MAPSP).** Renesse, Netherlands. June 2019.
Cup Emptying Games and I/O Scheduling.
Keynote talk.

163. **International Symposium on Computer Architecture and High Performance Computing (SBAC-PAD).** Campo Grande, Brazil. October 2019.
The Algorithmics of Write Optimization.
Keynote talk.

164. **University of São Paulo.** São Paulo, Brazil. October 2019.
Cup Emptying Games and I/O Scheduling.

165. **University of Michigan.** Ann Arbor, Michigan. October 2019.
Cup Emptying Games and I/O Scheduling.

166. **University of Hamburg.** Hamburg, Germany. August 2020.
Contention Resolution without Collision Detection.

167. **27th International Symposium on String Processing and Information Retrieval (SPIRE).** Orlando, FL. October 2020.
Filters.
Keynote talk.

168. **MIT.** Cambridge, MA. Nov 2020.
Filters.

169. **National University of Singapore.** Singapore. Jan 2022.
Filters.

170. **Workshop on Models and Algorithms for Planning and Scheduling (MAPSP).** Oropa, Italy. June 2022.
Tight Bounds for Parallel Paging and Green Paging.

171. **1st ACDA Workshop in Aussois.** Centre CNRS "Paul Langevin", Aussois, France September 2022.
Online Parallel Paging and Green Paging.

172. **Washington Univ.** St. Louis, MO. Oct 2022.
Gaps in My Research.

173. **SIAM SIAG-ACDA Online Seminar Series.** Dec 2022.
Online Parallel Paging and Green Paging.

174. **Dagstuhl Seminar: Contention Resolution without Collision Detection.** Germany. Feb 2023.
Contention Resolution without Collision Detection.

175. **VMware Research.** Palo Alto, CA. May 2023.
Online Parallel Paging and Green Paging.

176. **Workshop on Filters: From Bloom to Quotient and Everything in Between, SPAA'23**. Orlando, FL. June 2023.
Tutorial Introduction to Filters.

177. **ICERM Workshop on Fusing Theory and Practice of Graph Algorithms**. Providence, RI. February 2025.
Exacting Approximate Graph Representations, or How to Avoid Comp-Bio Hazards by Cleaning Your Filters.

Selected Department and University Service

1. Member, Graduate Admissions Committee, 1998-2002, 2006-2007
2. Member, School of Engineering Scholarship Committee, 2001
3. Organizer, Theory Qualifier, 1999, 2003
4. Host, Distinguished Lecturers (Bentley, Farach-Colton, Hart, Karger, Leiserson, Valiant, Goldwasser, Muthukrishnan), 2001, 2002, 2003, 2008, 2013, 2013, 2014.
5. CS Representative, Strategic Plan Advisory and Coordinating Committee (SPACC), 2002
6. Chair, Visibility/PR Committee, 2003-2004
7. Judge, Graduate Student Research Conference, 2003
8. Member, Quality of Life Committee, 2005-2008
9. CS Representative, Women in Science and Engineering (WISE), Course Counseling, 2002, 2005-present
10. Member, Undergraduate committee, 2005-2008
11. Director, Undergraduate honors program, 2005-2008
12. Member, Seawulf Cluster Management Committee, 2006-2008
13. Member, Recruiting Committee, 2010-2011
14. Member, Ad-hoc Awards Committee, 2012.
15. Co-director, Undergraduate CS Honors Program, 2010-2016.
16. Director, Undergraduate CS Honors Program, 2016-present.

Teaching at Stony Brook

1. **CSE 150 Honors Foundations of Computer Science**, Fall 2005, 2006, 2010, 2012, 2014, 2016, 2019.
Approximately 25-50 students per semester.

2. **CSE 215 Foundations of Computer Science**, Spring 2015.
Approximately 130 students per semester.

3. **CSE 303 Introduction to the Theory of Computation**, Spring 2003.
Approximately 100 students per semester.

4. **CSE 350 Theory of Computation: Honors**, Spring 2006, 2007, 2014, 2016, 2018, 2019. Fall 2020.
Approximately 10-20 students per semester.

5. **CSE 373 Undergraduate Analysis of Algorithms**, Spring 1999, 2001, 2002, 2005, 2017.
Approximately 80-110 students per semester.

6. **CSE 385 Honors Undergraduate Analysis of Algorithms**, Spring 2021, 2022, 2023.
   Approximately 60 students per semester.

7. **CSE 548 Graduate Analysis of Algorithms**, Fall 1998–2002, 2010, 2011, 2013, 2018, 2021. Spring 2012, 2013.
   Approximately 60–150 students per semester.

8. **CSE 638 Advanced Algorithms and Data Structures**, Spring 2005, 2007, 2011, 2012.
   Approximately 25 students per semester.

9. **CSE 642 Seminar in the Analysis of Algorithms**, Spring 2005–2007, Fall 2010–present.
   Approximately 20-40 students and faculty per semester.

10. **CSE 648 Randomized Algorithms and Advanced Data Structures**, Spring 2000, 2002, 2003.
    Approximately 30 students per semester.

11. **CSE 652 Seminar in the Analysis of Algorithms**, Fall 1999–Fall 2004.
    Approximately 20-30 students and faculty per semester.

Other Teaching

1. **Advanced Topics in Data Structures (taught in Spanish)**, July 1999.
   18 hour course. Escuela de Ciencias Informáticas, U Buenos Aires, Argentina.
   Approximately 110 students.

2. **MIT 6.895 Theory of Parallel Systems**, Fall 2003.
   Approximately 20 students.

3. **MIT 6.896 Theory of Parallel Hardware**, Spring 2004.
   Approximately 20 students.

4. **Algorithms for External Memory (taught in Spanish)**, July 2005.
   18 hour course. Escuela de Ciencias Informáticas, U Buenos Aires, Argentina.
   Approximately 40 students.

5. **Theoretical Foundations of Computer Science (taught in Spanish)**, July 2005.
   8 hour workshop. Instituto Tecnológico de Colima, Mexico.
   Approximately 10 students.

6. **Algorithms for External Memory (taught in Spanish)**, Sept 2006.
   5 hour tutorial. 7imo Encuentro Internacional de Ciencias de la Computación (ENC '06), San Luis Potosí, MX.
   Approximately 30 students.

7. **Databases and External Memory: Indexes, Write Optimization, and Cryptosearches**, May 2012.
   STOC Tutorial on Algorithms for Memory-Sensitive Computing. New York, NY. Approximately 40 attendees.

8. **Data Structures and Algorithms for Big Databases**, Sept 2012.
   4 hour tutorial. 6th Extremely Large Databases Conference, Workshop, and Tutorials (XLDB). Stanford, CA.
   Approximately 50 attendees.

9. **Data Structures and Algorithms for Big Databases**, Sept 2013.
   4 hour tutorial. 7th Extremely Large Databases Conference, Workshop, and Tutorials (XLDB). Stanford, CA.
   Approximately 50 attendees.

10. **Data Structures for Big Data**, Jan 2015.
    Week-long course. Ecole Normale Supériere de Lyon, Lyon France.

11. **Estructuras de Datos para los Sistemas de Almacenaje—Data structures for Storage Systems (taught in Spanish)**, July 2016.
    Week-long course. Escuela de Ciencias Informáticas. University of Buenos Aires. Approximately 70 students.

Postdocs/Research Scientists Hosted

1. David Tench. Sep 2020-Aug 2021.
   Followup positions: Rutgers (CRA Computing Innovation Fellow); Lawrence Berkeley Laboratory (Grace Hopper Fellow).

2. Tsvi Kopelowitz. Summer-Fall 2018.
   Followup position: Bar Ilan University (faculty).

3. Jun Yuan (Murray). Winter-Summer 2018.
   Followup positions: Pace University (faculty); WMware.

Former PhD Students

1. Yushen Huang. Co-advised with S. Bak and Y. Sun. PhD Summer 2025.
   Followup positions: JP Morgan; Google.

2. Tianchi (Maverick) Mo. PhD Summer 2025.

3. Evan West. PhD Summer 2025.
   Followup position: Meta Research.

4. Arghya Bhattacharya. PhD Summer 2024.
   Followup position: Google.

5. Rathish Das. Co-advised with R. Chowdhury and J.S.B. Mitchell. PhD Winter 2020.
   Followup positions: Waterloo (Postdoc); U Liverpool (Faculty); U Houston (Faculty).

6. Prashant Pandey. Co-advised with R. Johnson. PhD Fall 2019.
   Followup positions: CMU (postdoc); Lawrence Berkeley Lab/UC Berkeley (postdoc); VMware Research; University of Utah (faculty); Northeastern (faculty).

7. Shikha Singh. Co-advised with J. Chen. PhD Summer 2018.
   Followup positions: Wellesley (faculty); Williams College (faculty).

8. Tyler Mayer. AMS Dept, co-advised with J.S.B. Mitchell. PhD Spring 2018.
   Followup position: Charles River Analytics.
9. Samuel McCauley. PhD Summer 2016.
   Followup positions: ITU Copenhagen (postdoc); Bar-Ilan U (Zuckerman Fellow); Wellesley (postdoc); Williams College (faculty).
10. Roozbeh Ebrahimi. Co-advised with J.S.B. Mitchell. PhD Spring 2015.
    Followup position: Google.
11. Dzejla Medjedovic. PhD Summer 2014.
    Followup position: Sarajevo School of Science and Technology (faculty).
12. Pablo Montes. PhD Summer 2014.
    Followup position: Google.
13. Yonatan Fogel. Left pre-degree 2012.
    Followup positions: Tokutek, Oracle, VMware.
14. Haodong Hu. PhD Fall 2007.
    Followup position: Shanghai University of Finance and Economics (faculty).
15. Simai He. Left pre-degree 2004.
    Followup positions: Chinese University of Hong Kong (PhD student); Shanghai University of Finance and Economics (faculty).
16. Tien-Ruey Hsiang. Co-advised with E. Arkin and J.S.B. Mitchell. PhD Summer 2003.
    Followup position: National Taiwan University of Science and Technology (faculty).
17. Dongdong Ge. Left pre-degree 2003.
    Followup positions: Stanford (PhD); Shanghai University of Finance and Economics (faculty, dean).
18. Marcelo Sztainberg. Co-advised with Arkin and Mitchell. PhD Summer 2003.
    Followup position: Northeastern Illinois University (faculty).
19. Nenad Jovanovic. Co-advised with E. Arkin and J.S.B. Mitchell. PhD Winter 2002.
    Followup position: First Spring Corp.

Current PhD Students

1. Zhonglue Wang (AMS). Joined 2025.
2. Pritom Kundu. Joined Fall 2024.
3. Gilvir Gill. Joined Fall 2022.
4. Daniel Delayo. Joined Fall 2021.
5. Abiyaz Chowdhury. Joined Fall 2017.