Jennifer Lundelius Welch
Regents Professor Emerita

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Research Interests: Algorithms and lower bounds for distributed computing systems, including wireless and mobile networks. Specification, implementation and application of distributed shared objects. Communication network protocols. Timing models and clock synchronization. Modularity in design and analysis of distributed algorithms.

Education

- MASSACHUSETTS INSTITUTE OF TECHNOLOGY, Cambridge, MA (1982 to 1988)
  Ph.D. (Computer Science), 1988.
  Thesis entitled *Topics in Distributed Computing: The Impact of Partial Synchrony, and Modular Decomposition of Algorithms*.
  S.M. (Computer Science), 1984.
  Thesis entitled *Synchronizing Clocks in a Distributed System*.
- THE UNIVERSITY OF MASSACHUSETTS, Amherst, MA (1979 to 1980)
  Graduate coursework in computer science and linguistics.
- THE UNIVERSITY OF TEXAS AT AUSTIN, Austin, TX (1975 to 1979)
  B.A. (Plan II) summa cum laude, May 1979.
  Majored in a liberal arts honors program with a concentration in mathematics.

Professional Experience

- TEXAS A&M UNIVERSITY, College Station, TX (1992 to 2022)
  Regents Professor Emerita, Department of Computer Science and Engineering (2022 to present)
  Professor, Department of Computer Science and Engineering (2002 to 2022)
  Interim Department Head, Department of Computer Science (2001 to 2002)
  Associate Professor, Department of Computer Science (1996 to 2002)
  Assistant Professor, Department of Computer Science (1992 to 1996)
- THE UNIVERSITY OF NORTH CAROLINA, Chapel Hill, NC (1989 to 1992)
  Assistant Professor, Department of Computer Science.
- GTE LABORATORIES INCORPORATED, Waltham, MA (1988 to 1989)
  Member of Technical Staff, Intelligent Database Systems Department.
- AT&T BELL LABORATORIES, Murray Hill, NJ (summer 1986)
  Member of Technical Staff.
- SIPES, WILLIAMSON & ASSOCIATES, Midland, TX (1981 to 1982)
  Applications Fortran programmer at a petroleum engineering consulting company.
- TRACOR, INC., Austin, TX (1980 to 1981)
  Scientific Fortran programmer at a technical contractor for the Navy.

Honors, Awards, and Invited Talks

- Keynote talk at 36th International Symposium on Distributed Computing (DISC), "Using Linearizable Objects in Randomized Concurrent Programs," Oct 26, 2022.
- Colloquium Series Speaker, Department of Computer Science, University of New Mexico, "Using Linearizable Objects in Randomized Concurrent Programs," Feb 16, 2022.
- Distinguished Lecture Series, Ben-Gurion University, Israel, "Complexity of Multi-Valued Register Simulations: A Retrospective," Dec. 29, 2019.
- Colloquium Series for 40th Anniversary of Computer Science, "Complexity of Multi-Valued Register Simulations: A Retrospective," Augusta University, Georgia, Nov. 8, 2019.
- Keynote talk at 22nd International Conference on Principles of Distributed Systems (OPODIS), "Complexity of Multi-Valued Register Simulations: A Retrospective," Dec. 17, 2018.
- Distinguished Lecture Series, School of Computing, Informatics, and Decision Systems Engineering, Arizona State University, "Message-Passing Implementations of Shared Data Structures," Oct. 24, 2018.
- Invited tutorial on "Link Reversal Algorithms," 28th International Symposium on Distributed Computing (DISC), 2014.
- TEES Fellow, Dwight Look College of Engineering, Texas A&M University, 2013–14.
- Invited talk "Challenges for Formal Methods in Distributed Computing," 25th International Conference on Computer Aided Verification, 2013.
- ACM Distinguished Scientist Award, 2012.
- Best Paper Award: Srikanth Sastry, Scott Pike, and Jennifer L. Welch, "Crash Fault Detection in Celerating Environments," *Proc. 23rd IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, 12 pp., 2009.
- Texas A&M University Association of Former Students University Level Distinguished Achievement Award in teaching, 2009.
- Texas A&M University Association of Former Students College-Level Distinguished Teaching Award, 2008.
- Regent's Professor Award, Texas A&M University System, 2008.
- Crawford Service Award, Texas A&M University Dwight Look College of Engineering, 2007.
- Chevron Professor II, Texas A&M University Dwight Look College of Engineering, November 2004 to 2022.
- IEEE Education Society Hewlett-Packard Harriet B. Rigas Award for outstanding woman engineering educator, October 2004.
- TEES Fellow, Dwight Look College of Engineering, Texas A&M University, 2003.
- Lockheed Martin Aeronautics Company Award for Excellence in Engineering Teaching, Texas A&M University, 2003.
- Lockheed Martin Aeronautics Company Award for Excellence in Engineering Teaching, Texas A&M University, 2000.
- The Association of Former Students of Texas A&M University, Faculty Distinguished Achievement Award in Teaching, Dwight Look College of Engineering, Texas A&M University, 2000.
- Halliburton Fellow, Dwight Look College of Engineering, Texas A&M University, 1998–1999.
- National Science Foundation Presidential Young Investigator Award, 1991.
- IBM Faculty Development Award, 1990.

Publications

Books

[B1] Jennifer L. Welch and Jennifer E. Walter, *Link Reversal Algorithms,* Synthesis Lectures on Distributed Computing Theory, Morgan & Claypool Publishers, 93 pp., 2011.

[B2] Hagit Attiya and Jennifer Welch, *Distributed Computing: Fundamentals, Simulations and Advanced Topics, Second Edition,* John Wiley & Sons, 414 pp., March 2004.

Book Chapter

[BC1] Hagit Attiya and Jennifer L. Welch, "Shared Memory and the Bakery Algorithm". In Dahlia Malkhi (Ed.), *Concurrency: The Works of Leslie Lamport* (pp. 29–46), ACM Books, 2019.

In Refereed Journals

[J1] Hagit Attiya, Sweta Kumar, Archit Somani, and Jennifer L. Welch, "Store-Collect in the Presence of Continuous Churn with Applications to Snapshots and Lattice Agreement," *Information and Computation,* vol. 285, part B, 104869, ISSN 0890-5401, 21 pp., 2022.

[J2] Hagit Attiya, Hyun Chul Chung, Faith Ellen, Saptaparni Kumar, and Jennifer L. Welch, "Emulating a Shared Register in a System That Never Stops Changing," *IEEE Transactions on Parallel and Distributed Systems,* vol. 30, no. 3, pp. 544–559, 2019.

[J3] Saptaparni Kumar and Jennifer L. Welch, "Implementing $\diamond P$ with Bounded Messages on a Network of ADD Channels," *Parallel Processing Letters,* vol. 29, no. 1, 12 pp., 2019.

[J4] Edward Talmage and Jennifer L. Welch, "Anomalies and Similarities Among Consensus Numbers of Variously-Relaxed Queues," *Computing,* vol. 101, no. 9, pp. 1349-1368, 2019.

[J5] Jiaqi Wang, Edward Talmage, Hyunyoung Lee, and Jennifer L. Welch, "Improved Time Bounds for Linearizable Implementations of Abstract Data Types," *Information and Computation,* vol. 263, pp. 1–30, 2018.

[J6] Edward Talmage and Jennifer L. Welch, "Relaxed Data Types as Consistency Conditions," *Algorithms*, vol. 11, no. 5, article 61, 18 pp., 2018.

[J7] Bernadette Charron-Bost, Matthias Fuegger, Jennifer L. Welch, and Josef Widder, "Time Complexity of Link Reversal Routing," *ACM Transactions on Algorithms,* vol. 11, no. 3, pp. 18:1–18:39, 2015.

[J8] Andreas Klappenecker, Hyunyoung Lee, and Jennifer L. Welch, "Finding Available Parking Spaces Made Easy," *Ad Hoc Networks Journal,* vol. 12, pp. 243–249, 2014.

[J9] Alejandro Cornejo, Saira Viqar, and Jennifer L. Welch, "Reliable Neighbor Discovery for Mobile Ad Hoc Networks," *Ad Hoc Networks Journal,* vol. 12, pp. 259–277, 2014.

[J10] Andreas Klappenecker, Hyunyoung Lee, and Jennifer L. Welch, "Dynamic Regular Registers in Systems with Churn," *Theoretical Computer Science,* vol. 512, pp. 84–97, 2013.

[J11] Saira Viqar and Jennifer L. Welch, "Deterministic Collision-Free Communication Despite Continuous Motion," *Ad Hoc Networks,* vol. 11, no. 1, pp. 508–521, 2013.

[J12] Rebecca Ingram, Tsvetomira Radeva, Patrick Shields, Saira Viqar, Jennifer E. Walter, and Jennifer L. Welch, "A Leader Election Algorithm for Dynamic Networks with Causal Clocks," *Distributed Computing,* vol. 26, no. 2, pp. 75–97, 2013.

[J13] Srikanth Sastry, Tsvetomira Radeva, Jianer Chen, and Jennifer L. Welch, "Reliable Networks with Unreliable Sensors," *Pervasive and Mobile Computing,* vol. 9, no. 2, pp. 311–323, 2013.

[J14] Bernadette Charron-Bost, Antoine Gaillard, Jennifer L. Welch, and Josef Widder, "Link Reversal Routing with Binary Link Labels: Work Complexity," *SIAM Journal on Computing,* vol. 42, no. 2, pp. 634–661, 2013.

[J15] Scott M. Pike, Srikanth Sastry, and Jennifer L. Welch, "Failure Detectors Encapsulate Fairness," *Distributed Computing*, vol. 25, no. 4, pp. 313–333, 2012.

[J16] Cheng Shao, Jennifer L. Welch, Evelyn Pierce, and Hyunyoung Lee, "Multi-Writer Consistency Conditions for Shared Memory Registers," *SIAM Journal on Computing*, vol. 40, no. 1, pp. 28–62, 2011.

[J17] Khushboo Kanjani, Hyunyoung Lee, Whitney L. Maguffee, and Jennifer L. Welch, "A Simple Byzantine Fault-Tolerant Algorithm for a Multi-Writer Regular Register," *International Journal of Parallel, Emergent and Distributed Systems*, vol. 25, no. 5, pp. 423–435, 2010.

[J18] Andreas Klappenecker, Hyunyoung Lee, and Jennifer L. Welch, "Scheduling Sensors by Tiling Lattices," *Parallel Processing Letters*, vol. 20, no. 1, pp. 3–13, 2010.

[J19] Hagit Attiya, Alex Kogan, and Jennifer L. Welch, "Efficient and Fault-Tolerant Local Mutual Exclusion in Mobile Ad Hoc Networks," *ACM/IEEE Transactions on Mobile Computing,* vol. 9, no. 3, pp. 361–375, 2010.

[J20] Shlomi Dolev, Elad Schiller, and Jennifer L. Welch, "Random Walk for Self-Stabilizing Group Communication in Ad Hoc Networks," *IEEE Transactions on Mobile Computing*, vol. 5, no. 7, pp. 893–905, 2006.

[J21] Yu Chen and Jennifer L. Welch, "Self-Stabilizing Dynamic Mutual Exclusion for Mobile Ad Hoc Networks," *Journal of Parallel and Distributed Computing,* vol. 65, no. 9, pp. 1072–1089, 2005.

[J22] Shlomi Dolev, Seth Gilbert, Nancy A. Lynch, Alex Shvartsman, and Jennifer L. Welch, "GeoQuorums: Implementing Atomic Memory in Mobile Ad Hoc Networks," *Distributed Computing* (special issue of invited papers from DISC 2003), vol. 18, no. 2, pp. 125–155, 2005.

[J23] Navneet Malpani, Nitin Vaidya, Yu Chen and Jennifer L. Welch, "Distributed Token Circulation on Mobile Ad Hoc Networks," *IEEE Transactions on Mobile Computing,* vol. 4, no. 2, pp. 154–165, 2005.

[J24] Hyunyoung Lee and Jennifer L. Welch, "Randomized Registers and Iterative Algorithms," *Distributed Computing,* vol. 17, no. 3, pp. 209–221, 2005.

[J25] Shlomi Dolev and Jennifer L. Welch, "Self-Stabilizing Clock Synchronization in the Presence of Byzantine Faults," *Journal of the ACM,* Vol. 51, No. 5, pp. 780–799, 2004.

[J26] Jennifer E. Walter, Jennifer L. Welch, and Nancy A. Amato, "Distributed Reconfiguration of Metamorphic Robot Chains," *Distributed Computing,* Vol. 17, No. 2, pp. 171–189, 2004.

[J27] Injong Rhee and Jennifer L. Welch, "The Impact of Timing Knowledge on the Session Problem," *SIAM Journal on Computing,* Vol. 32, No. 4, pp. 1007–1039, 2003.

[J28] Hyunyoung Lee, Nitin Vaidya, and Jennifer L. Welch, "Location Tracking Using Quorums in Mobile Ad-Hoc Networks," *Ad Hoc Networks,* Elsevier Science, Vol. 1, No. 4, pp. 371–381, Nov. 2003.

[J29] Jennifer E. Walter, Jennifer L. Welch, and Nancy M. Amato, "Concurrent Metamorphosis of Hexagonal Robot Chains into Simple Connected Configurations," *IEEE Transactions on Robotics and Automation,* Vol. 18, No. 6, pp. 945–956, Dec. 2002.

[J30] Jennifer E. Walter, Jennifer L. Welch, and Nitin Vaidya, "A Mutual Exclusion Algorithm for Ad Hoc Mobile Networks," *Wireless Networks*, Vol. 7, No. 6, pp. 585–600, Nov. 2001.

[J31] Saad Biaz and Jennifer L. Welch, "Closed Form Bounds for Clock Synchronization Under Simple Uncertainty Assumptions," *Information Processing Letters*, Vol. 80, No. 3, pp. 151–157, 2001.

[J32] Soma Chaudhuri, Martha J. Kosa, and Jennifer L. Welch, "One-Write Algorithms for Multivalued Regular and Atomic Registers," *Acta Informatica*, Vol. 37, pp. 161–192, 2000.

[J33] Shlomi Dolev, Michael Kate, and Jennifer L. Welch, "A Competitive Analysis for Retransmission Timeout," *Networks,* Vol. 34, No. 1, pp. 73–80, 1999.

[J34] Hagit Attiya, Soma Chaudhuri, Roy Friedman, and Jennifer L. Welch, "Shared Memory Consistency Conditions for Non-Sequential Execution: Definitions and Programming Strategies," *SIAM Journal on Computing*, Vol. 27, No. 1, pp. 65–89, Feb. 1998.

[J35] Injong Rhee and Jennifer L. Welch, "Time Bounds on Synchronization in a Periodic Distributed System," *Information Processing Letters*, Vol. 64, No. 2, pp. 87–93, 1997.

[J36] Shlomi Dolev and Jennifer L. Welch, "Wait-free Clock Synchronization," *Algorithmica*, Vol. 18, pp. 486–511, 1997.

[J37] Shlomi Dolev and Jennifer L. Welch, "Crash-Resilient Communication in Dynamic Networks," *IEEE Transactions on Computers*, Vol. 46, No. 1, pp. 14–26, Jan. 1997.

[J38] Hosame Abu-Amara, Brian A. Coan, Shlomi Dolev, Arkady Kanevsky, and Jennifer L. Welch, "Self-Stabilizing Topology Maintenance Protocols for High-Speed Networks," *IEEE/ACM Transactions on Networking*, Vol. 4, No. 6, pp. 902–912, Dec. 1996.

[J39] Shlomi Dolev, Dhiraj K. Pradhan, and Jennifer L. Welch, "Modified Tree Structure for Location Management in Mobile Environments," *Computer Communications*, Vol. 19, pp. 335–345, 1996.

[J40] Soma Chaudhuri, Brian A. Coan, and Jennifer L. Welch, "Using Adaptive Timeouts to Achieve At-Most-Once Message Delivery," *Distributed Computing*, Vol. 9, pp. 109–117, 1995.

[J41] Hagit Attiya, Shlomi Dolev, and Jennifer L. Welch, "Connection Management Without Retaining Information," *Information and Computation*, Vol. 123, No. 2, pp. 155–171, Dec. 1995.

[J42] Hagit Attiya and Jennifer L. Welch, "Sequential Consistency versus Linearizability," *ACM Transactions on Computer Systems,* vol. 12, no. 1, pp. 91–122, May 1994.

[J43] Soma Chaudhuri and Jennifer L. Welch, "Bounds on the Costs of Multivalued Register Implementations," *SIAM Journal on Computing,* vol. 23, no. 2, pp. 335–354, Apr. 1994.

[J44] Jennifer L. Welch and Nancy A. Lynch, "A Modular Drinking Philosophers Algorithm," *Distributed Computing*, vol. 6, pp. 233–244, 1993.

[J45] Brian A. Coan and Jennifer L. Welch, "Modular Construction of an Efficient 1-Bit Byzantine Agreement Protocol," *Mathematical Systems Theory*, vol. 26, no. 1, pp. 131–154, 1993.

[J46] Brian A. Coan and Jennifer L. Welch, "Modular Construction of a Byzantine Agreement Protocol with Optimal Message Bit Complexity," *Information and Computation*, vol. 97, no. 1, pp. 61–85, Mar. 1992.

[J47] Brian A. Coan and Jennifer Lundelius Welch, "Transaction Commit in a Realistic Timing Model," *Distributed Computing*, vol. 4, no. 2, pp. 87-103, June 1990.

[J48] Jennifer Lundelius Welch and Nancy Lynch, "A New Fault-Tolerant Algorithm for Clock Synchronization," *Information and Computation,* vol. 77, no. 1, pp. 1–36, Apr. 1988.

[J49] Jennifer Lundelius Welch, "Simulating Synchronous Processors," *Information and Computation*, vol. 74, no. 2, pp. 159–171, Aug. 1987.

[J50] Jennifer Lundelius and Nancy Lynch, "An Upper and Lower Bound for Clock Synchronization," *Information and Control,* vol. 62, nos. 2/3, pp. 190–204, Aug./Sep. 1984.

<u>In Refereed Conferences</u>

[C1] Hagit Attiya and Jennifer L. Welch, "Bounds on Worst-Case Responsiveness for Agreement Algorithms," *27th International Conference on Principles of Distributed Systems (OPODIS),* 14 pp., 2023.

[C2] Hagit Attiya and Jennifer L. Welch, "Multi-Valued Connected Consensus: A New Perspective on Crusader Agreement and Adopt-Commit," *27th International Conference on Principles of Distributed Systems (OPODIS),* 14 pp., 2023.

[C3] Hagit Attiya, Constantin Enea, and Jennifer L. Welch, "Blunting an Adversary Against Randomized Concurrent Programs with Linearizable Implementations," *41st ACM Symposium on Principles of Distributed Computing (PODC),* pp. 209–2019, 2022.

[C4] Hagit Attiya, Constantin Enea, and Jennifer L. Welch, "Impossibility of Strongly-Linearizable Message-Passing Objects via Simulation by Single-Writer Registers," *35th International Symposium on Distributed Computing (DISC),* pp. 7.1–7.18, 2021.

[C5] Hagit Attiya, Sweta Kumar, Archit Somani, and Jennifer L. Welch, "Store-Collect in the Presence of Continuous Churn with Applications to Snapshots and Lattice Agreement," *22nd International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS),* pp. 1–15, 2020.

[C6] Edward Talmage and Jennifer L. Welch, "Relaxed Data Types as Consistency Conditions," *19th International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS),* pp. 142–156, 2017.

[C7] Edward Talmage and Jennifer L. Welch, "Anomalies and Similarities Among Consensus Numbers of Variously-Relaxed Queues," *7th International Conference on Networked Systems (NETYS),* pp. 191–205, 2017.

[C8] Keishla D. Ortiz-Lopez and Jennifer L. Welch, *Bounded Reordering Allows Efficient Reliable Message Transmission, 31st International Parallel and Distributed Processing Symposium,* pp. 327–336, 2017.

[C9] Edward Talmage and Jennifer L. Welch, "Generic Proofs of Consensus Numbers for Abstract Data Types," *19th International Conference on Principles of Distributed Systems (OPODIS),* 15 pp., 2015.

[C10] Hagit Attiya, Hyun Chul Chung, Faith Ellen, Saptaparni Kumar and Jennifer L. Welch, "Simulating a Shared Register in an Asynchronous System that Never Stops Changing," *29th International Symposium on Distributed Computing (DISC),* pp. 75–91, 2015.

[C11] Edward Talmage and Jennifer L. Welch, "Improving Average Performance by Relaxing Distributed Data Structures," *Proc. 28th International Symposium on Distributed Computing (DISC),* pp. 421–438, 2014.

[C12] Jiaqi Wang, Edward Talmage, Hyunyoung Lee, and Jennifer L. Welch, "Improved Time Bounds for Linearizable Implementations of Abstract Data Types," *Proc. 28th International Parallel and Distributed Processing Symposium (IPDPS),* pp. 691–701, 2014.

[C13] Hyun Chul Chung, Srikanth Sastry, and Jennifer L. Welch, "Stabilizing Dining with Failure Locality 1," *Proc. 15th International Conference on Distributed Computing and Networking (ICDCN),* pp. 532–537, 2014.

[C14] Silvia Bonomi, Andreas Klappenecker, Hyunyoung Lee, and Jennifer L. Welch, "Stochastic Modeling of Dynamic Distributed Systems with Crash Recovery and its Application to Atomic Registers," *Proc. 16th International Conference on Principles of Distributed Systems (OPODIS),* pp. 79–90, 2012.

[C15] Srikanth Sastry, Jennifer L. Welch, and Josef Widder, "Wait-free Stabilizing Dining Using Regular Registers," *Proc. 16th International Conference on Principles of Distributed Systems (OPODIS),* pp. 284–299, 2012.

[C16] Hyun Chul Chung, Saira Viqar, and Jennifer L. Welch, "Neighbor Knowledge of Mobile Nodes in a Grid Network," *Proc. 32nd IEEE International Conference on Distributed Computing Systems (ICDCS)*, pp. 486–495, 2012.

[C17] Andreas Klappenecker, Hyunyoung Lee, and Jennifer L. Welch, "Dynamic Regular Registers in Systems with Churn," *Proc. 13th International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS)*, pp. 296–310, 2011.

[C18] Andreas Klappenecker, Hyunyoung Lee, and Jennifer L. Welch, "Quorum-Based Dynamic Regular Registers in Systems with Churn," *Proc. 3rd Workshop on Theoretical Aspects of Dynamic Distributed Systems (TADDS)*, pp. 3–7, 2011.

[C19] Bernadette Charron-Bost, Matthias Fuegger, Jennifer L. Welch, and Josef Widder, "Full Reversal Routing as a Linear Dynamical System," *Proc. 18th International Colloquium on Structural Information and Communication Complexity (SIROCCO)*, pp. 101–112, 2011.

[C20] Bernadette Charron-Bost, Matthias Fuegger, Jennifer L. Welch, and Josef Widder, "Partial is Full," *Proc. 18th International Colloquium on Structural Information and Communication Complexity (SIROCCO)*, pp. 113–124, 2011.

[C21] Hyun-Chul Chung, Peter Robinson, and Jennifer L. Welch, "Optimal Regional Consecutive Leader Election in Mobile Ad-Hoc Networks," *Proc. 7th International Workshop on Foundations of Mobile Computing (FOMC)*, pp. 52–61, 2011.

[C22] Srikanth Sastry, Tsvetomira Radeva, and Jennifer L. Welch, "Reliable Networks with Unreliable Sensors," *Proc. 12th International Conference on Distributed Computing and Networking (ICDCN)*, pp. 281–292, 2011.

[C23] Scott M. Pike, Srikanth Sastry, and Jennifer L. Welch, "Failure Detectors Encapsulate Fairness," *Proc. 14th International Conference On Principles Of Distributed Systems (OPODIS)*, pp. 173–188, 2010.

[C24] Hyun Chul Chung, Peter Robinson, and Jennifer L. Welch, "Regional Consecutive Leader Election in Mobile Ad-Hoc Networks," *Proc. DIALM-POMC Joint Workshop on Foundations of Mobile Computing,* pp. 81–90, 2010.

[C25] Alejandro Cornejo, Saira Viqar, and Jennifer L. Welch, "Reliable Neighbor Discovery for Mobile Ad Hoc Networks," *Proc. DIALM-POMC Joint Workshop on Foundations of Mobile Computing,* pp. 63–72, 2010.

[C26] Andreas Klappenecker, Hyunyoung Lee, and Jennifer L. Welch, "Finding Available Parking Spaces Made Easy," *Proc. DIALM-POMC Joint Workshop on Foundations of Mobile Computing,* pp. 49–52, 2010.

[C27] Alejandro Cornejo, Nancy A. Lynch, Saira Viqar, and Jennifer L. Welch, "A Neighbor Discovery Service Using an Abstract MAC Layer," *Proc. 47th Allerton Conference on Communication, Control and Computing*, 2009. (Invited.)

[C28] Srikanth Sastry, Scott M. Pike, and Jennifer L. Welch, "Crash-Quiescent Failure Detection," *Proc. 23rd International Symposium on Distributed Computing (DISC)*, pp. 326–340, 2009.

[C29] Bernadette Charron-Bost, Antoine Gaillard, Jennifer L. Welch, and Joseph Widder, "Routing Without Ordering," *Proc. 21st ACM Symposium on Parallelism in Algorithms and Architectures (SPAA)*, pp. 145–153, 2009.

[C30] Srikanth Sastry, Scott Pike, and Jennifer L. Welch, "The Weakest Failure Detector for Wait-free Dining Under Eventual Weak Exclusion," *Proc. 21st ACM Symposium on Parallelism in Algorithms and Architectures (SPAA)*, pp. 111–120, 2009.

[C31] Saira Viqar and Jennifer L. Welch, "Collision-Free Communication Despite Continuous Motion," *Proc. 5th International Workshop on Algorithmic Aspects of Wireless Sensor Networks (Algosensors)*, 2009.

[C32] Bernadette Charron-Bost, Jennifer L. Welch, and Joseph Widder, "Link Reversal: How to Play Better to Work Less," *Proc. 5th International Workshop on Algorithmic Aspects of Wireless Sensor Networks (Algosensors)*, 2009.

[C33] Rebecca Ingram, Patrick Shields, Jennifer Walter, and Jennifer L. Welch, "An Asynchronous Leader Election Algorithm for Dynamic Networks," *Proc. 23rd IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, 12pp., 2009.

[C34] Srikanth Sastry, Scott Pike, and Jennifer L. Welch, "Crash Fault Detection in Celerating Environments," *Proc. 23rd IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, 12pp., 2009. Recipient of Best Paper Award.

[C35] Khushboo Kanjani, Hyunyoung Lee, and Jennifer L. Welch, "Byzantine Fault-Tolerant Implementation of a Multi-Writer Regular Register," *Proc. 14th IEEE Workshop on Dependable Parallel, Distributed and Network-Centric Systems (DPDNS)*, 8 pp., 2009.

[C36] Gautam Roy, Hyunyoung Lee, Jennifer L. Welch, Yuan Zhao, Vijitashwa Pandey, and Deborah Thurston, "A Distributed Pool Architecture for Genetic Algorithms," *Proc. 11th IEEE Congress on Evolutionary Computation (CEC)*, 2009.

[C37] Hagit Attiya, Alex Kogan, and Jennifer L. Welch, "Efficient and Fault-Tolerant Local Mutual Exclusion in Mobile Ad Hoc Networks," *Proc. 28th International Conference on Distributed Computing Systems*, 2008.

[C38] Vijitashwa Pandey, Deborah Thurston, Khushboo Kanjani and Jennifer Welch, "Distributed Data Sources for Lifecycle Design," *Proc. 16th International Conference on Engineering Design (ICED),* 2007.

[C39] Faith Ellen, Siva Subramanian, and Jennifer L. Welch, "Maintaining Information About Nearby Nodes in a Mobile Environment," *Proc. 8th International Conference on Distributed Computing and Networking (ICDCN),* 2006.

[C40] Hagit Attiya, David Hay, and Jennifer L. Welch, "Optimal Clock Synchronization under Energy Constraints in Wireless Ad-Hoc Networks," *Proc. 9th International Conference on Principles of Distributed Systems (OPODIS)*, 2005.

[C41] Yu Chen and Jennifer L. Welch, "Location-based Broadcasting for Dense Mobile Ad Hoc Networks," *Proc. 8th ACM/IEEE International Symposium on Modeling, Analysis and Simulation of Wireless and Mobile Systems (MSWiM)*, pp. 63–70, 2005.

[C42] Shlomi Dolev, Seth Gilbert, Nancy A. Lynch, Elad Schiller, Alex A. Shvartsman, and and Jennifer L. Welch, "Virtual Mobile Nodes for Mobile Ad Hoc Networks," *Proc. 18th International Symposium on Distributed Computing (DISC),* pp. 230–244, Oct. 2004.

[C43] Guangtong Cao and Jennifer L. Welch, "Accurate Multihop Clock Synchronization in Mobile Ad Hoc Networks," *Proc. IEEE International Workshop on Mobile Wireless Networking,* pp. 13–20, Aug. 2004.

[C44] Cheng Shao, Evelyn Pierce, and Jennifer L. Welch, "Multi-Writer Consistency Conditions for Shared Memory Objects," *Proc. 17th International Symposium on Distributed Computing (DISC),* pp. 106–120, Oct. 2003.

[C45] Shlomi Dolev, Seth Gilbert, Nancy A. Lynch, Alex A. Shvartsman, and Jennifer L. Welch, "GeoQuorums: Implementing Atomic Memory in Ad Hoc Networks", *Proc. 17th International Symposium on Distributed Computing (DISC),* pp. 3076–320, Oct. 2003.

[C46] Shlomi Dolev, Elad Schiller, and Jennifer L. Welch, "Random Walk for Self-Stabilizing Group Communication in Ad-Hoc Networks," *Proc. 21st Symposium on Reliable Distributed Systems,* pp. 70–79, Oct. 2002.

[C47] Yu Chen and Jennifer L. Welch, "Self-Stabilizing Mutual Exclusion Using Tokens in Mobile Ad Hoc Networks," *Proc. 6th International Workshop on Discrete Algorithms and Methods for Mobile Computing and Communications,* pp. 34–42, Sep. 2002.

[C48] Hyunyoung Lee and Jennifer L. Welch, "Randomized Shared Queues Applied To Distributed Optimization Algorithms," *Proc. 12th International Symposium on Algorithms and Computation (ISAAC),* pp. 587–598, Dec. 2001.

[C49] Navneet Malpani, Nitin Vaidya and Jennifer L. Welch, "Distributed Token Circulation in Mobile Ad Hoc Networks," *Proc. 9th International Conference on Network Protocols (ICNP)*, pp. 4–13, Nov. 2001.

[C50] Hyunyoung Lee and Jennifer L. Welch, "Applications of Probabilistic Quorums to Iterative Algorithms," *Proc. 21st IEEE International Conference on Distributed Computing Systems (ICDCS)*, pp. 21–30, Apr. 2001.

[C51] Navneet Malpani, Jennifer L. Welch, and Nitin Vaidya, "Leader Election Algorithms for Mobile Ad Hoc Networks," *Proc. 4th International Workshop on Discrete Algorithms and Methods for Mobile Computing and Communications (DIAL M)*, pp. 96–103, Aug. 2000.

[C52] Jennifer E. Walter, Jennifer L. Welch, and Nancy Amato, "Distributed Reconfiguration of Metamorphic Robot Chains," *Proc. 19th ACM Symposium on Principles of Distributed Computing (PODC)*, pp. 171–180, July 2000.

[C53] Jennifer E. Walter and Jennifer L. Welch, "Hazard-Free Connection Release," *Proc. International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA)*, pp. 1668–1672, June/July 1997.

[C54] Sundarrajan Kanthadai and Jennifer L. Welch, "Implementation of Recoverable Distributed Shared Memory by Logging Writes," *Proc. 16th International Conference on Distributed Computing Systems (ICDCS),* pp. 116–124, May 1996.

[C55] Injong Rhee and Jennifer L. Welch, "Time Bounds on the Response Time for the Dining Philosophers Problem," *Proc. International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA),* Nov. 1995.

[C56] Shlomi Dolev, Michael Kate, and Jennifer L. Welch, "A Competitive Analysis for Retransmission Timeout," *Proc. 15th International Conference on Distributed Computing Systems (ICDCS)*, pp. 450–455, May/June 1995.

[C57] Shlomi Dolev, Dhiraj K. Pradhan, and Jennifer L. Welch, "Modified Tree Structure for Location Management in Mobile Environments," *Proc. 14th Annual Joint Conference of IEEE Computer and Communication Societies (INFOCOM),* pp. 530–537, Apr. 1995.

[C58] Hagit Attiya, Shlomi Dolev, Jennifer L. Welch, "Connection Management Without Retaining Information," *Proc. 28th Annual Hawaii International Conference on System Sciences (HICSS)*, Vol. II (Software Technology), pp. 622–631, Jan. 1995.

[C59] Hosame Abu-Amara, Brian Coan, Shlomi Dolev, Arkady Kanevsky, and Jennifer L. Welch, "A Fault-Tolerant Layered Approach to Fiber Optic Networks," *Proc. Conference on High-Speed Networking and Multimedia Computing, IS&T/SPIE Symposium on Electronic Imaging Science & Technology*, pp. 380–391, Feb. 1994.

[C60] Shlomi Dolev and Jennifer L. Welch, "Crash Resilient Communication in Dynamic Networks," *Proc. 7th International Workshop on Distributed Algorithms (WDAG)* (Springer-Verlag LNCS 725), pp. 129–144, Sep. 1993.

[C61] Shlomi Dolev and Jennifer L. Welch, "Wait-Free Clock Synchronization," *Proc. 12th ACM Symposium on Principles of Distributed Computing (PODC),* pp. 97–108, Aug. 1993.

[C62] Hagit Attiya, Soma Chaudhuri, Roy Friedman, and Jennifer L. Welch, "Shared Memory Consistency Conditions for Non-Sequential Execution: Definitions and Programming Strategies," *Proc. 5th ACM Symposium on Parallel Algorithms and Architectures (SPAA),* pp. 241–250, July 1993.

[C63] Injong Rhee and Jennifer L. Welch, "The Impact of Time on the Session Problem," *Proc. 11th ACM Symposium on Principles of Distributed Computing (PODC),* pp. 191–202, Aug. 1992.

[C64] Soma Chaudhuri, Martha Kosa, and Jennifer L. Welch, "Upper and Lower Bounds for One-Write Multivalued Regular Registers," *Proc. 3rd IEEE Symposium on Parallel and Distributed Processing (SPDP),* pp. 134–141, Dec. 1991.

[C65] Soma Chaudhuri, Brian A. Coan, and Jennifer L. Welch, "Using Adaptive Timeouts to Achieve At-Most-Once Message Delivery," *Proc. 5th International Workshop on Distributed Algorithms (WDAG)* (Springer-Verlag LNCS 579), pp. 151–166, Oct. 1991.

[C66] Hagit Attiya and Jennifer L. Welch, "Sequential Consistency vs. Linearizability," *Proc. 3rd ACM Symposium on Parallel Algorithms and Architectures (SPAA),* pp. 304–315, July 1991.

[C67] Soma Chaudhuri and Jennifer L. Welch, "Bounds on the Costs of Register Implementations," *Proc. 4th International Workshop on Distributed Algorithms (WDAG)* (Springer-Verlag LNCS 486), pp. 402–421, Sep. 1990.

[C68] Brian A. Coan and Jennifer L. Welch, "A Byzantine Agreement Protocol with Optimal Message Bit Complexity," *Proc. 27th Allerton Conference on Communication, Control and Computing,* pp. 1062–1071, Sep. 1989.

[C69] A. Prasad Sistla and Jennifer L. Welch, "Efficient Distributed Recovery Using Message Logging," *Proc. 8th ACM Symposium on Principles of Distributed Computing (PODC),* pp. 223-238, Aug. 1989.

[C70] Brian A. Coan and Jennifer L. Welch, "Modular Construction of Efficient Byzantine Agreement Protocols," *Proc. 8th ACM Symposium on Principles of Distributed Computing (PODC),* pp. 295–306, Aug. 1989.

[C71] Jennifer Lundelius Welch, Leslie Lamport, and Nancy Lynch, "A Lattice-Structured Proof Technique Applied to a Minimum Spanning Tree Algorithm," *Proc. 7th ACM Symposium on Principles of Distributed Computing (PODC),* pp. 28–43, Aug. 1988.

[C72] Brian A. Coan and Jennifer Lundelius, "Transaction Commit in a Realistic Fault Model," *Proc. 5th ACM Symposium on Principles of Distributed Computing (PODC),* pp. 40-51, Aug. 1986.

[C73] Jennifer Lundelius and Nancy Lynch, "A New Fault-Tolerant Algorithm for Clock Synchronization," *Proc. 3rd ACM Symposium on Principles of Distributed Computing (PODC),* pp. 75-88, Aug. 1984.

Selected Other Publications and Presentations

[O1] Hagit Attiya and Jennifer L. Welch, "Brief Announcement: Multi-Valued Connected Consensus: A New Perspective on Crusader Agreement and Adopt-Commit," *Proc. 37th International Symposium on Distributed Computing (DISC),* pp. 36:1–36:7, 2023

[O2] Hagit Attiya, Sweta Kumari, Archit Somani, and Jennifer L. Welch, "Brief Announcement: Collect in the Presence of Continuous Churn with Application to Snapshots and Lattice Agreement," *Proc. 39th ACM Symposium on Principles of Distributed Computing (PODC),* pp. 51–53, 2020.

[O3] Soma Chaudhuri, Reginald Frank, and Jennifer L. Welch, "Brief Announcement: How Fast Reads Affect Multi-Valued Register Simulations," *Proc. 38th ACM Symposium on Principles of Distributed Computing (PODC),* pp. 215–217, 2019.

[O4] Reginald Frank and Jennifer L. Welch, "Brief Announcement: A Tight Lower Bound for Clock Synchronization in Odd-Ary M-Toroids," *Proc. 32nd International Symposium on Distributed Computing (DISC),* pp. 47:1–47:3, 2018.

[O5] Shlomi Dolev, Seth Gilbert, Elad Schiller, Alex Shvartsman and Jennifer L. Welch, "Brief Announcement: Autonomous Virtual Mobile Nodes," *Proc. 17th ACM Symposium on Parallelism in Algorithms and Architectures (SPAA)*, p. 215, July 2005.

[O6] Jennifer E. Walter, Jennifer L. Welch, and Nancy Amato, "Distributed Reconfiguration of Hexagonal Metamorphic Robots in Two Dimensions," in *SPIE Sensor Fusion and Decentralized Control in Robotic Systems III*, Proc. of SPIE Vol. 4196, pp. 441–453, Nov. 2000.

[O7] Soma Chaudhuri, Sundarrajan Kanthadai, and Jennifer L. Welch, "Brief Announcement: The Role of Data-Race-Free Programs in Recoverable DSM," *Proc. 15th ACM Symposium on Principles of Distributed Computing (PODC)*, p. 245, May 1996.

[O8] Barbara Simons, Jennifer L. Welch, and Nancy A. Lynch, "An Overview of Clock Synchronization," (pp. 84–96) *in* B. Simons and A. Spector (Eds.), *Fault-Tolerant Distributed Computing*, Lecture Notes in Computer Science 448, Springer-Verlag, New York, 1990.

Grants

1. "AF:Small:Relaxed Distributed Data Structures: Implementations and Applications," National Science Foundation, PI: Jennifer Welch, 2018–2022; $397,000.
2. "AF:Small:Complexity of Distributed Storage," National Science Foundation, PI: Jennifer Welch, 2015–2018; $416,000.
3. "AF:Medium:A Fair Prescription for Partial Synchrony," National Science Foundation, PI: Jennifer Welch, co-PI: Scott Pike, 2010–2015; $737,656.
4. "Robust Algorithms for Vehicular Ad Hoc Networks," Texas Higher Education Coordinating Board Advanced Research Program; PI: Jennifer Welch, 2008–2010; $149,162.
5. "Increasing the Longevity of Power-Constrained Sensor Networks," Texas Higher Education Coordinating Board Advanced Research Program; PI: Scott Pike, co-PI: Jennifer Welch; 2006–2008; $99,100.
6. "Collaborative Research: Randomized Distributed Data Structures for Product Design," National Science Foundation; PIs: Jennifer Welch and Deborah Thurston (University of Illinois); 2005–2009; $200,000 (TAMU portion).
7. "Increasing Computer Science Retention with Peer Teachers and Learning Modules," Texas Higher Education Coordinating Board Texas Technology Workforce Development Grant Program; PI: Valerie Taylor, co-PI: Jennifer Welch; 2004–2006; $173,158.
8. "GAANN: Fellowships for Research in Computer Science and Computer Engineering," Department of Education; PI: Valerie Taylor, co-PIs: Donald Friesen, Jianer Chen, Jennifer Welch, and Nancy Amato; 2003–2006; $131,184.
9. "Increasing Computer Science Retention by Developing and Deploying Self-Paced Learning Modules," Texas Higher Education Coordinating Board Texas Technology Workforce Development Grant Program; PI: Jennifer Welch, co-PI: Frank Shipman; 2002–2003; $228,329.

10. "Programming Distributed Systems with Randomized Shared Objects," Texas Higher Education Coordinating Board Advanced Research Program; PI: Jennifer Welch; 2002–2003; $144,000.
11. "Self-Stabilizing Group Communication for Mobile Environments," National Science Foundation; PI: Jennifer Welch, co-PI: Nancy Lynch (MIT), collaborating researcher: Shlomi Dolev (Ben-Gurion University); 2001–2004; $280,000 (TAMU portion).
12. "Distributed Algorithms for Mobile Ad Hoc Networks," National Science Foundation; PI: Jennifer Welch, co-PI: Nitin Vaidya; 1999–2001; $100,000.
13. "GAANN: Fellowships for Research in Robotics, Training, Mobile Computing, and High-Performance Computing," U.S. Department of Education; PI: Richard Volz, co-PIs: Louis Everett, Jennifer Welch, Nancy Amato; 1998–2001; $605,328.
14. "CISE Research Instrumentation: Distributed Computing and Real-Time Networking Research," National Science Foundation; PI: Nitin Vaidya, co-PIs: Wei Zhao, Jennifer Welch, Nancy Amato; 1995; $108,360.
15. "The Impact of Time on Distributed Computing," National Science Foundation Presidential Young Investigator Award; 1991–1997; $377,000. Matching money from IBM, Dazix Corporation, Shell Oil Company Foundation, and Texas Instruments.
16. "The Impact of Time on Distributed Computing," The University of North Carolina at Chapel Hill Junior Faculty Development Award; 1991; $3000.
17. "Partially Synchronous Models of Distributed Systems," IBM Faculty Development Award; 1990–1992; $60,000.
18. "The Impact of Time on Distributed Computing," National Science Foundation Research Initiation Award; 1990–1992; $60,000.

Postdoctoral Scholars and Students

Postdoctoral Scholars Sponsored

1. Soumyottam Chatterjee, 2020–2021. Ashoka University, India.
2. Hyun Chul Chung, 2013–2015. Epoch Labs, Austin, TX.
3. Josef Widder, 2010–2011. Informal Systems, Austria.
4. Evelyn Pierce, 2002–2003. Self-employed.
5. Shlomi Dolev, 1992–1995. Professor, Department of Computer Science, Ben-Gurion University, Israel.
6. Soma Chaudhuri, 1990–1991. Associate Professor, Department of Computer Science, Iowa State University, Ames, IA.

PhD Students

1. Saptaparni Kumar, "Fault-Tolerant Distributed Services in Message-Passing Systems," 2019. First position: postdoctoral associate, Boston College, Boston, MA.
2. Edward Talmage, "Towards Understanding Relaxations of Distributed Data Structures", 2018. First position: Assistant Professor, Bucknell College, Lewisburg, PA.
3. Hyun-Chul Chung, "Information Infrastructures in Distributed Environments: Algorithms for Mobile Networks and Resource Allocation," 2013. First position: Epoch Labs, Austin, TX.
4. Saira Viqar, "Communication Algorithms for Wireless Ad-Hoc Networks," 2012. First position: Self-employed, Pakistan.

5. Srikanth Sastry, "A Prescription for Partial Synchrony," 2011. Co-advised with Scott Pike. First position: Postdoctoral Fellow, MIT, Cambridge, MA.
6. Yu Chen, "Design and Analysis of Distributed Primitives for Mobile Ad Hoc Networks," 2005. First position: Postdoctoral Fellow, INSA, Lyons, France.
7. Guangtong Cao, "Distributed Services in Mobile Ad Hoc Networks," 2005. First position: Sun Microsystems, CA.
8. Hyunyoung Lee, "Randomized Memory Model and Its Applications in Distributed Computing," 2001. First position: Assistant Professor, University of Denver, Denver, CO.
9. Jennifer E. Walter, "Distributed Algorithms for Mobile Computing Systems," 2000. First position: Assistant Professor, Vassar College, Poughkeepsie, NY.
10. Injong Rhee (graduated from UNC), "Efficiency of Partial Synchrony, and Resource Allocation in Distributed Systems," 1994. First position: Assistant Professor, North Carolina State University, Raleigh, NC.
11. Martha J. Kosa (graduated from UNC), "Consistency Guarantees for Concurrent Shared Objects," 1994. First position: Assistant Professor, Tennessee Technological University, Cookeville, TN.

Master's Students (MS, thesis)

1. Sai Krishna Aditya Biradavolu, "Multi-Valued Register Simulations," 2021.
2. Keishla Ortiz-Lopez, "Bounded Protocols for Efficient Reliable Message Transmission," 2017.
3. Sanat Pandey, "Performance Comparison of Neighbor Discovery Protocols in Wireless Ad-Hoc Networks," 2015.
4. Jiaqi Wang, "Timing Bounds for Shared Objects in Partially Synchronous Systems," 2011.
5. Gautam Roy, "A Distributed Pool Architecture for Genetic Algorithms," 2009.
6. Keerthi Deconda, "Fault Tolerant Pulse Synchronization," 2008.
7. Khushboo Kanjani, "Supporting Fault-Tolerant Communication in Networks," 2008.
8. Cheng Shao, "Multi-Writer Consistency Conditions for Shared Memory Objects", 2007.
9. Siva Subramanian, " Deterministic Knowledge about Nearby Nodes in a Mobile One Dimensional Wireless Environment", 2006.
10. Nicholas Neumann, "Two Algorithms for Leader Election and Network Size Estimation in Mobile Ad Hoc Networks", 2004.
11. Sangeeta Bhattacharya, "Randomized Location Service in Mobile Ad Hoc Networks," 2003.
12. Navneet Malpani, "Distributed Algorithms for Mobile Ad Hoc Networks," 2001.
13. Joseph Koothrappally, "CARSystem: A Distributed Algorithm for Efficient Real-Time Vehicular Traffic Control," 1997.
14. Jennifer Walter, "Hazard-Free Connection Release," 1997.
15. Jiantian Yang, "An Algorithm for Recovery of Distributed Applications with Directed Dependencies," 1996.
16. Sundarrajan Kanthadai, "Recoverable Distributed Shared Memory," 1996.
17. Julio Rivera, "Providing Ordered Message Delivery in Communication Network Systems," 1995.
18. Michael Kate, "A Competitive Analysis for Retransmission Timeout," 1994.

Master's Students (MCS, project)

1. Prasad Nagaraja, "Performance Analysis of Mutual Exclusion Algorithm for Mobile Ad Hoc Networks," 2001.
2. Saritha Goli, "Performance Analysis of Leader Election Algorithm for Mobile Ad Hoc Networks," 2001.
3. Utkarsh Dhond, "Blackboard Systems: A Medium for Communication and Collaboration," 1998.
4. Jim Tobaben, "Graphical Representations of Sorting Algorithms for Instruction," 1998.

Undergraduates

1. Ian Matson, "Fairness Properties of the Trusting Failure Detector," TAMU Undergraduate Research Scholar, 2021–2022.
2. Emma Ziesmer, "Simulating a Shared Queue on Top of Eventually Synchronous Message-Passing Distributed Systems," TAMU Undergraduate Research Scholar, 2021–2022.
3. Luis Pantin, "Improvements for Store-Collect and Atomic Snapshot Objects Under Continous Churn," TAMU Undergraduate Research Scholar, 2020–2021.
4. David Wang, "Empirical Analysis of a Byzantine Tolerant Shared Register," TAMU Undergraduate Research Scholar, 2020–2021.
5. Reginald Frank, "Lower Bounds for Distributed Computing Problems", participant in CRA-W's Distributed Research Experience for Undergraduates, Summer 2018.
6. Ryan Garmeson, "Studying the Relationship Between Graph Structure and Effective Relaxation," TAMU Undergraduate Research Scholar, 2018–2019.
7. Gerald Hu, "Average-Case Analysis of Selected Distributed Algorithms," TAMU Undergraduate Research Scholar, 2018–2019.
8. Grant Kirchhofer, "Solving the RMTP with an Unknown Bound on Reordering Using Bounded Counters," TAMU Undergraduate Research Scholar, 2017–2018.
9. Himank Yadav, "Detecting Failures in an Asynchronous System that Never Stops Changing," TAMU Undergraduate Research Scholar, 2017–2018.
10. Gerald Hu, "Effect of Relaxed Priority Queue on Dijkstra's Algorithm", participant in CRA-W's Distributed Research Experience for Undergraduates NSF REU student, Summer 2016.
11. Erick Lin, "Distributed Algorithms for Relaxed Stacks", participant in CRA-W's Distributed Research Experience for Undergraduates NSF REU student, Summer 2016.
12. Alyssa Byrnes, "An Improved Algorithm for a Relaxed Queue", participant in CRA-W's Distributed Research Experience for Undergraduates (DREU) program, Summer 2015.
13. Shihua Zheng, "A Weaker Hybrid Consistency Condition for Shared Memory Objects," TAMU Undergraduate Research Scholar, 2014.
14. Keishla Ortiz Lopez, "Simulating Shared Memory in Distributed Systems with Churn," participant in NSF Research Experience for Undergraduates (REU) program (Computing for Disasters), Summer 2013.
15. Nathan DeJong, summer undergraduate research on fault-tolerant distributed resource allocation algorithms, 2013.
16. Jacob Zerr, summer undergraduate research on fault-tolerant distributed resource allocation algorithms, 2013.
17. Tejas Sharma, directed studies on equivalence of fairness-based and partially-synchronous models, Fall 2011.

18. Tsvetomira Radeva, "An Asynchronous Leader Election Algorithm for Dynamic Networks without Perfect Clocks," participant in CRA-W's Distributed Research Experiences for Undergraduates (DREU) program, Summer 2009.
19. Whitney Maguffee, "A Simple and Efficient Byzantine Fault-Tolerant Algorithm for a Multi-Writer Regular Register," participant in CRA-W's Distributed Research Experiences for Undergraduates (DREU) program, Summer 2009.
20. Rebecca Ingram, "Leader Election Algorithm for Mobile Ad Hoc Networks Tolerant of Concurrent Topology Changes," participant in CS Department's NSF Research Experience for Undergraduates (REU) program, Summer 2007.
21. Ricardo Suzuki, "Iterative Search: A Distributed Token Circulation Algorithm for MANETs" participant in CS Department's NSF Research Experience for Undergraduates (REU) program, Summer 2004.
22. Sharlita Stevenson, "Analyzing a Renaming Algorithm for Mobile Ad Hoc Networks," participant in CRA-W's Distributed Mentor Program (DMP), Summer 2004
23. Marianne Manglicmot, "Development of Web-Based Learning Module on Mobile Ad Networks", TAMU Engineering Undergraduate Summer Research Program, Summer 2003.
24. Allen Parish, directed studies on "Java Simulator for Distributed Algorithms in Mobile Ad Hoc Networks," Summer 2003.
25. Rajan Chandra, "Clock Synchronization for Mobile Ad Hoc Networks," Undergraduate Research Fellow Senior Honors Thesis, 2002–2003.
26. Sherwin Abraham, directed studies on "Trends of a Linear Equation Solving Simulator Based on Distributed Shared Memory and Randomized Algorithms," Summer 2001.
27. Sybil Calvillo, directed studies on "General Behavior of Randomized Distributed Stack," Summer 2001.
28. Rajan Chandra, "Clock Synchronization in Mobile Ad Hoc Networks," TAMU Engineering Undergraduate Summer Research Program, 2001.
29. Richard Li, directed studies on "Optimizations to Probabilistic Quorum Algorithm," Summer 2001.
30. Dustin Kirkland, "An Implementation and Analysis of a Randomized Distributed Stack," Undergraduate Research Fellow Senior Honors Thesis, 2000–2001.
31. Delayne Vaughn, directed studies on "Solving Systems of Equations Using Distributed Shared Memory Implemented with a Randomized Algorithm," Fall 2000.
32. Kera Alexander, directed studies on "Group Communication in Mobile Ad Hoc Networks," Summer 2000.
33. Christopher Wurtz, directed studies on "GUI for Mobile Ad Hoc Mutual Exclusion Algorithm," Spring 2000.

Courses Developed

- Developed a more advanced undergraduate analysis of algorithms course (CSCE 411) to fit with revised undergraduate curriculum.
- Developed undergraduate discrete structures for computing course (CSCE 222).
- Developed new two-semester course sequence for freshman computer science and computer engineering majors (CSCE 111 and 211), incorporating more software engineering concepts, including object-oriented programming using Java.

- Developed CSCE 668, Distributed Algorithms and Systems. Covers theoretical approach to distributed computer systems, especially loosely-coupled and failure-prone ones: formal models, algorithm design and analysis, lower bounds and impossibility proofs.
- Developed CSCE 689, Special Topics in Discrete Algorithms for Mobile and Wireless Networks, jointly with Prof. Nancy Lynch at MIT (6.885). Covers distributed algorithms for mobile and/or wireless ad hoc networks that can be described precisely, and that have relatively well-defined correctness, fault-tolerance, and performance requirements; aim is to understand the existing theory of such algorithms and contribute to its further development.
- At UNC: developed a new graduate advanced algorithms course on parallel and distributed algorithms, based on classic and recent research results.
- At UNC: co-developed graduate advanced distributed systems course, synthesis of concepts from systems development and theoretical results.

Courses Taught

Graduate Courses

- CSCE 603, Database Systems and Applications
- CSCE 627, Theory of Computability
- CSCE 629, Analysis of Algorithms
- CSCE 637, Complexity Theory
- CSCE 668, Distributed Algorithms and Systems
- CSCE 689, Special Topics in Discrete Algorithms for Mobile and Wireless Networks
- At UNC: Comp 212, Operating Systems
- At UNC: Comp 214, Translators
- At UNC: Comp 228, Advanced Analysis of Algorithms
- At UNC: Comp 290, Advanced Distributed Systems (co-taught)

Undergraduate Courses

- CSCE 110H, Honors Programming I
- CSCE 121H, Honors Introduction to Program Design and Concepts
- CSCE 121, Introduction to Program Design and Concepts
- CSCE 110, Programming I (Java)
- CSCE 120, Programming II (Data Structures in Java and C)
- CSCE 181, Introduction to Computer Science
- CSCE 211H, Honors Data Structures and Implementations
- CSCE 221H, Honors Data Structures and Algorithms
- CSCE 222H, Honors Discrete Structures for Computing
- CSCE 289 (now numbered 111), Special Topics in Computer Science Concepts and Programming
- CSCE 289 (now numbered 222), Special Topics in Discrete Structures for Computing
- CSCE 310, Database Systems
- CSCE 311H, Honors Analysis of Algorithms
- CSCE 311, Analysis of Algorithms
- CSCE 411, Design and Analysis of Algorithms
- CSCE 433, Formal Languages and Automata
- At UNC: Comp 121, Data Structures:

Professional Activities

Editor of Distributed Computing Column in SIGACT News, 2013 to 2019.

Editor of Morgan & Claypool Synthesis Lectures on Distributed Computing Theory, 2014 to 2017.

Editorial board member for

- *Distributed Computing*, 2009 to 2022.
- *Chicago Journal of Theoretical Computer Science*, 1994 to 2022.
- *International Journal of Parallel, Emergent and Distributed Systems,* 2010 to 2013.
- *Journal of the Chinese Institute of Engineers*, 2003 to 2005.

Guest co-editor for

- *Mobile Networks and Applications (MONET) Special Issue on Foundations of Mobile Computing,* 2006.

General chair and co-organizer for

- ACM Workshop on Principles of Mobile Computing (POMC), Aug. 2001 (held in conjunction with PODC 2001).

Elected steering committee chair for ACM Symposium on Principles of Distributed Computing, 2018 to 2021.

Elected steering committee member for ACM Symposium on Principles of Distributed Computing, 2009 to 2012.

Steering committee member for Workshop on Foundations of Mobile Computing (formerly known as DIALM-POMC), 2011 to 2015.

Program committee chair for

- DIALM-POMC Joint Workshop on Foundations of Mobile Computing, Sep. 2003 (co-chair)
- 15th International Conference on Distributed Computing (DISC), Oct. 2001
- 18th ACM Symposium on Principles of Distributed Computing (PODC), May 1999

Program committee member for

- 31st International Colloquium on Structural Information and Communication Complexity (SIROCCO), May 2024
- 37th International Symposium on Distributed Computing (DISC), Oct. 2023
- 25th International Symposium on Stabilization, Safety and Security of Distributed Systems (SSS), Oct. 2023
- 26th International Conference on Principles of Distributed Systems (OPODIS), Dec. 2022
- 29th International Colloquium on Structural Information and Communication Complexity (SIROCCO), June 2022
- 35th International Symposium on Distributed Computing (DISC), Oct. 2021
- 34th International Symposium on Distributed Computing (DISC), Oct. 2020
- 40th IEEE International Conference on Distributed Computing Systems (ICDCS), Nov–Dec 2020
- 26th International Colloquium on Structural Information and Communication Complexity (SIROCCO), July 2019
- 21st International Symposium on Stabilization, Safety and Security of Distributed Systems (SSS), Oct. 2019
- 22nd International Conference on Principles of Distributed Systems (OPODIS), Dec. 2018
- 32nd International Symposium on Distributed Computing (DISC), Oct. 2018
- 31st International Symposium on Distributed Computing (DISC), Oct. 2017
- 36th ACM Symposium on Principles of Distributed Computing (PODC), July 2017
- 31st International Parallel and Distributed Processing Symposium (IPDPS), May 2017

- 30th International Symposium on Distributed Computing (DISC), Sep. 2016
- 25th International Conference on Parallel Architectures and Compilation Techniques (PACT), Sep. 2016
- 17th International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS), Aug. 2015
- 34th ACM Symposium on Principles of Distributed Computing (PODC), Jul. 2015
- 16th International Conference on Distributed Computing and Networking (ICDCN), Jan. 2015
- 18th International Conference on Principles of Distributed Systems (OPODIS), Dec. 2014
- 33rd ACM Symposium on Principles of Distributed Computing (PODC), Jul. 2014
- 27th International Symposium on Distributed Computing (DISC), Oct. 2013.
- 25th ACM Symposium on Parallelism in Algorithms and Architectures (SPAA), July 2013.
- 40th International Colloquium on Automata, Languages and Programming (ICALP), July 2013.
- 33rd International Conference on Distributed Computing Systems (ICDCS), July 2013.
- 16th International Conference on Principles of Distributed Systems (OPODIS), Dec. 2012.
- 26th International Symposium on Distributed Computing (DISC), Oct. 2012
- 14th International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS), Oct. 2012
- 32th International Conference on Distributed Computing Systems (ICDCS), Jun. 2012
- 26th International Parallel and Distributed Processing Symposium (IPDPS), May 2012
- 13th International Conference on Distributed Computing and Networking (ICDCN), Jan. 2012
- 23rd ACM Symposium on Parallelism in Algorithms and Architectures (SPAA), Jun. 2011
- 6th ACM International Workshop on Foundations of Mobile Computing (DIALM-POMC), Sep. 2010
- 24th International Symposium on Distributed Computing (DISC), Sep. 2010
- 22nd ACM Symposium on Parallelism in Algorithms and Architectures (SPAA), Jun. 2010
- 30th International Conference on Distributed Computing Systems (ICDCS), Jun. 2010
- 11th International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS), Nov. 2009
- 5th International Workshop on Algorithmic Aspects of Wireless Sensor Networks (Algosensors), Jul. 2009
- 6th IEEE Conference on Sensor, Mesh and Ad Hoc Communications and Networks (SECON), Jun. 2009
- 29th International Conference on Distributed Computing Systems (ICDCS), Jun. 2009
- 27th ACM Symposium on Principles of Distributed Computing (PODC), Jul. 2008
- 28th International Conference on Distributed Computing Systems (ICDCS), Jun. 2008
- 22nd International Parallel and Distributed Processing Symposium (IPDPS), Apr. 2008
- 21st International Symposium on Distributed Computing (DISC), Sep. 2007
- DIALM-POMC Joint Workshop on Foundations of Mobile Computing, Aug. 2007
- 8th International Conference on Distributed Computing and Networking (ICDCN) (formerly IWDC), Dec. 2006
- 5th IEEE International Symposium on Network Computing and Applications (NCA), Jul. 2006

- 25th ACM Symposium on Principles of Distributed Computing (PODC), Jul. 2006
- 1st International Workshop on Foundations and Algorithms for Wireless Networking (FAWN), Mar. 2006
- 19th International Symposium on Distributed Computing (DISC), Sep. 2005
- DIALM-POMC Joint Workshop on Foundations of Mobile Computing, Sep. 2004
- 1st Workshop on Dependability Issues in Wireless Ad Hoc Networks and Sensor Networks, June 2004.
- 1st International Workshop on Algorithmic Aspects of Wireless Sensor Networks (Algosensors), July 2004
- 9th International Conference on Mobile Computing and Networking (MobiCom), Sep. 2003
- International Parallel and Distributed Processing Symposium (IPDPS), Apr. 2003
- 14th International Symposium on Distributed Computing (DISC), Oct. 2000
- 3rd International Workshop on Discrete Algorithms and Methods for Mobile Computing and Communications (DIAL M), Aug. 1999
- 16th ACM Symposium on Principles of Distributed Computing (PODC), Aug. 1997
- 17th International Conference on Distributed Computing Systems (ICDCS) – vice chair, May 1997
- 13th ACM Symposium on Principles of Distributed Computing (PODC), Aug. 1994
- 7th International Workshop on Distributed Algorithms (WDAG), Sep. 1993
- 13th International Conference on Distributed Computing Systems (ICDCS), May 1993
- 6th International Workshop on Distributed Algorithms (WDAG), Nov. 1992
- IEEE Conference on Communication Software: Communications for Distributed Applications and Systems, Apr. 1991

Reviewer for *Journal of the ACM*, *ACM Transactions on Computer Systems*, *ACM Transactions on Programming Languages and Systems*, *ACM/IEEE Transactions on Networking*, *IEEE Transactions on Computers*, *IEEE Transactions on Parallel and Distributed Systems*, *IEEE Transactions on Software Engineering*, *Information and Computation*, *Distributed Computing*, *Journal of Parallel and Distributed Computing*, *Information Processing Letters*, National Science Foundation, Israel Basic Research Foundation, etc.

Significant University, College and Department Service

- Member of University Information Policy Committee, 2010–2015.
- Co-chair of ADVANCE Speaker Series Committee, 2011–2016.
- Member of University Honors Programs Advisory Committee, 2007–2010.
- TAMU Faculty Senate, member, elected, June 2000 to May 2003.
- TAMU Women's Faculty Network, steering committee member, elected, July 1998 to June 2001; steering committee president, elected, July 1999 to June 2000.
- College of Engineering Ombuds Officer, 2013–2018.
- Member of Steering Council on Engineering Honors, 2015–2022.
- Member of College of Engineering Tenure and Promotion Advisory Committee, 2006–2008 and 2014–2016.
- Member of Engineering Faculty Advisory Committee (EFAC), elected, 2010–2013.

- Co-Director of ACE Scholars departmental undergraduate honors program, 2013–2015; Co-Coordinator of CSCE Track of Engineering Honors, 2015–2022.
- Various departmental committees, member. **Chair** of Faculty Awards (2013–2016 [co-chair]), Growth (2013–2017), Promotion and Tenure (2006–2012), Faculty Search (2016–2017, 2011, 2003–2004), Undergraduate Curriculum (2005–2007, 1999–2001), Web Advisory (2002–2004), Colloquium (1998–1999).

rev. Dec. 27, 2023