

# Dorian Cecil Arnold, Ph.D.

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**Technical Interests:** Computer System Software R&D, including AI- and data-driven approaches.

**Other Interests:** University Leadership; Computing and STEM Education; Inclusive Workforce Development.

## Professional Preparation

- 2008 **Ph.D., Computer Sciences**, *University of Wisconsin*, Advisor: Dr. Barton Miller
- 1998 **M.S., Computer Science**, *University of Tennessee*, Advisor: Dr. James Plank
- 1996 **B.S. summa cum laude, Mathematics, Computer Science**, *Regis University*
- 1994 **A.S., Mathematics, Physics, Chemistry**, *St. John's Junior College (Belize)*

## Professional Appointments

- 2017 – **Associate Professor**, *Computer Science*, Emory University
- 2018 – **Director of Graduate Studies**, *Computer Science and Informatics*, Emory University
- 2009 – 2017 **Assistant/Associate Professor**, *Computer Science*, University of New Mexico
- 2013 **Summer Faculty**, *Department of Scalable System Software*, Sandia National Labs
- 2011 – 2013 **Affiliate Research Scientist**, *Ultrascale Systems Research Center*, New Mexico Consortium
- 2009 – 2010 **Visiting Scientist**, *Ctr. Applied Scientific Computing*, Lawrence Livermore National Lab
- 2006 **Technical Scholar**, *Ctr. Applied Scientific Computing*, Lawrence Livermore National Lab
- 1999 – 2001 **Research Associate**, *Innovative Computing Laboratory*, University of Tennessee

## Scientist, Architect, Manager, Administrator, Leader!

- 30 Years Distributed, Runtime, and Operating Systems Software R&D, including HPC Systems, Fault-tolerance, Debugging and Performance Analysis, and Middleware.
- 18+ Years Small and large team Management with many direct reports; Developing and executing strategic vision; Developing and managing multi-million dollar budgets, including six and seven figure contracts.
- 8 Years Directing a complex multi-department graduate program; Overseeing 200% and 100% growth in students and faculty, respectively; Student Recruitment, Admission and Progress; Curricular Revisions; and Professional Development.

## Technical Proficiencies and Highlights

- ★★★★ C/C++, Linux/Unix, Performance Tools, Telemetry, Job Schedulers, Resource Managers
- ★★★★☆ Java, Python, MPI, Debuggers, Software Testing, Parallel File Systems, Computer System Simulation
- ★★☆☆ OpenMP, Matlab, Fortran, Scientific and Numerical Libraries, Scrum, Agile Development
- ☆☆☆☆ Large Language Models, Kubernetes/Docker, Workflow Orchestration

## Scholarship Highlights

- 70+ refereed research papers and one patent, in selective venues like SC, IPDPS and ICPP
- 2400+ citations. h-index: 26; i40-index: 13; i10-index: 41
- 2 R&D Top 100 awards
- \$13M of collaborative sponsored research, including \$3.4M of PI funding

- Partnerships strong industry, DOE lab, and university collaborations, including \$1.6M corporate funding
- Software production software packages deployed on leadership platforms across the world
- Renown Distinguished ACM Speaker (2017-2020); IEEE Senior Member; many Invited Keynote/Plenary Talks

## Administrative Highlights

- Grew PhD students from ~40 to more than 120 and faculty from ~20 to more than 40.
- Advanced program, including helped to lead major curriculum revision to align program requirements with scholarly activities, increase student flexibility, and support earlier research engagement.
- Improved operations, including formalization of faculty responsibilities, and student petitions, evaluations and progress audits. Also led the automation of many student and faculty facing processes.
- Increased activity, including PhD student research, publication activities and degrees conferred.
- Inclusive recruitment, retention and graduation of increased numbers of women and under-represented minorities.

## Service Highlights

- 2023– Board of Directors, Computing Research Association – Education
- 2023–2026 Steering Committee, BPCNet: Broadening Participation in Computing Network
- 2021–2025 Steering Committee, SC Conference (Chair in 2024)
- 2024 Belize National Science, Technology, and Innovation Advisory Committee
- 2023 General Chair, SC Conference
- 2017–2020 Distinguished Speaker, Association of Computing Machinery
- 2015–2019 Associate Editor, IEEE Transactions on Parallel and Distributed Systems
- 2017 General Chair, ACM Richard Tapia Celebration of Diversity in Computing
- 2015 Founder/Co-Chair, The HPC Pipeline Workshop: Diversifying the HPC Workforce

## Select Projects and Project Supervision

- Software Synthesis Statistical and AI-based methods for synthesizing *Application Analogs*, proxies, benchmarks, traces, or other workload representatives of real applications. (Ongoing SNL collaboration.)
- Telemetry Practical monitoring optimizations, via data-driven principles for configuring spatial (which sensors) and temporal (sampling frequency) monitoring and data reductions. (Ongoing TACC collaboration.)
- Resilience Studied various aspects of fault-tolerance, primarily using software prototypes and simulation to evaluate checkpoint/restart protocols under various configurations, workloads, and platform environments. This project resulted in many high-impact research publications and the training of multiple PhD, MS, and BS students. (Past collaboration with Sandia National Labs and University of Tennessee.)
- Software Testing Managed team of software engineers and students in the design and development of production software regression and specification compliance tests for Cray Programming Environment suite, including C, C++ and Fortran tests for Cray Compilers, MPI, OpenMP, SHMEM, and CUDA. (2014 – 2020, supported by Hewlett Packard Enterprise, formerly Cray Inc.)
- Overlay Networks Founding researcher/developer of the multicast/reduction network, a tree-based overlay network for flexible, reliable data multicast and aggregation. MRNet has improved by orders of magnitude the scalability of many tools and applications and is used at laboratories and universities worldwide.
- Scalable Debugging Founding researcher/developer of the stack trace analysis tool (STAT), which uses MRNet to organize application stack traces into spatiotemporal call graph prefix trees for scalable debugging. STAT won an R&D Magazine Top 100 award in 2011 and remains in production use on large HPC systems today.
- Grid Computing Technical lead and developer of the network-enabled solvers (NetSolve), a client-server middleware for remote access to complex hardware and software resources. NetSolve has been used in many real applications across many domains and won an R&D Magazine Top 100 award, in 2000.

Rollback Recovery Developed the Checkpoint Library for Unix Based Systems (CLUBS), for user-transparent checkpoint/restart, integrating optimizations like efficient file formats and exploiting copy-on-write semantics.

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## Awards and Honors

- 2017–2020 Distinguished Speaker, Association for Computing Machinery (ACM)
- 2016 University of New Mexico Nominee, Blavatnik Award for Young Scientists
- 2014 Senior member, Institute of Electrical and Electronics Engineers (IEEE)
- 2011 R&D 100 Award for Development of Stack Trace Analysis Tool.
- 2006–2008 Intel Ph.D. Fellow, 1 of 41 nationally.
- 2003 Best Student Paper finalist, SC Conference.
- 1999 R&D 100 Award for Development of NetSolve Project.
- 1997 Computer Science Graduate Teaching Assistant of the Year, University of Tennessee.
- 1996 Alan M. Turing Award for Excellence in Computer Science, Regis University.
- 1995 Invited to Regis Chapter of Alpha Sigma Nu, academic honors society.
- 1994 Regis University Natural Science Scholarship (Mathematics), 1 of 2 based on open examination.
- 1992 Government of Belize Junior College Scholarship, based on national examination.

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## Publications

### Publication Statistics

**(Gathered May 2026 from Google Scholar)**

- 2454 **Total Citations**, 65+ refereed articles including 22 conference papers, 16 journal papers, 29 workshop papers, 2 book chapters and 1 patent.
- 341 **Citations per most cited article**
- 26 **H-index**, 26 articles cited at least 26 times
- 4 **i100-index**, 4 articles cited at least 100 times
- 14 **i40-index**, 14 articles cited at least 40 times
- 45 **i10-index**, 45 articles cited at least 10 times

Student advisees highlighted in [green](#); students co-advisees highlighted in [yellow](#).)

### Peer-Reviewed Articles

- J1 [Nichole Etienne](#), Simon Garcia de Gonzalo, and [Dorian Arnold](#). Openmp-annotated code dataset for large language model fine-tuning on parallel programming tasks. *Frontiers in High Performance Computing*, Volume 4 - 2026, 2026. ISSN 2813-7337. doi: 10.3389/fhpcp.2026.1771927. URL <https://www.frontiersin.org/journals/high-performance-computing/articles/10.3389/fhpcp.2026.1771927>.
- J2 Raquell Holmes, Roscoe Giles, and [Dorian Arnold](#). Diversity, Equity, and Inclusion for Computer and Information Science and Engineering Conferences: How Change Happens and Four Things You Can Do Now. *Computing in Science & Engineering*, 25(1):57–60, 2023. doi: 10.1109/MCSE.2023.3284799.
- J3 David Debonis, Trilce Estrada, Ryan Grant, Kevin Pedretti, James Laros III, and [Dorian Arnold](#). APE: Metrics for Understanding Application Performance Efficiency under Power Caps. *Sustainable Computing: Informatics and Systems*, 34(100702), 2022. doi: 10.1016/J.SUSCOM.2022.100702. URL <https://doi.org/10.1016/j.suscom.2022.100702>.
- J4 [Dorian Arnold](#), Manuel Pérez Quiñones, Michelle Rogers, and Burçin Tamer. Expanding the pipeline: The context, importance, and experience of writing departmental bpc plans. *Computing Research News*, 34(5), May 2022.

- C1 [Whit Schonbein](#), Ryan Grant, Matthew Dosanjh, and [Dorian Arnold](#). INCA: In-Network Compute Assistance. In *The International Conference of High-Performance Computing, Networking, Storage and Analysis (SC19)*, Denver, CO, USA, 2019.
- J5 [Samuel Gutiérrez](#), [Dorian Arnold](#), Kei Davis, and Patrick McCormick. On the Memory Attribution Problem: A Solution and Case Study using MPI. *Concurrency and Computation: Practice and Experience*, February 2019. doi: 10.1002/cpe.5159. URL <https://onlinelibrary.wiley.com/doi/abs/10.1002/cpe.5159>.
- J6 Thomas Herault, Yves Robert, Aurelien Bouteiller, [Dorian Arnold](#), Kurt Ferreira, George Bosilca, and Jack Dongarra. Checkpointing Strategies for Shared High-Performance Computing Platforms. *International Journal of Networking and Computing*, 9(1):28–52, 2019. ISSN 2185-2847. URL <http://ijnc.org/index.php/ijnc/article/view/195>.
- J7 [Taylor Groves](#), Ryan Grant, [Aaron Gonzales](#), and [Dorian Arnold](#). Unraveling Network-Induced Memory Contention: Deeper Insights with Machine Learning. *IEEE Transactions on Parallel and Distributed Systems*, 29(8):1907–1922, August 2018. ISSN 1045-9219. doi: 10.1109/TPDS.2017.2773483.
- C2 [Nathan Hjelm](#), Matthew Dosanjh, [Taylor Groves](#), Patrick Bridges, and [Dorian Arnold](#). Improving MPI Multi-threaded RMA Communication Performance. In *47th International Conference on Parallel Processing (ICPP 2018)*, Eugene, OR, USA, August 2018.
- W1 Thomas Héroult, Yves Robert, Aurelien Bouteiller, [Dorian Arnold](#), Kurt Ferreira, George Bosilca, and Jack Dongarra. Optimal Cooperative Checkpointing for Shared High-Performance Computing Platforms. In *2018 IEEE International Parallel and Distributed Processing Symposium Workshops*, pages 803–812, Vancouver, BC, Canada, May 2018. doi: 10.1109/IPDPSW.2018.00127. Best Paper Award in 20th Workshop on Advances in Parallel and Distributed Computational Models (APDCM 2018).
- C3 [Samuel Gutiérrez](#), Kei Davis, [Dorian Arnold](#), Randal Baker, Robert Robey, Patrick McCormick, Daniel Holladay, Jon Dahl, R. Joe Zerr, Florian Weik, and Christoph Junghans. Accommodating Thread-Level Heterogeneity in Coupled Parallel Applications. In *IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, Orlando, FL, USA, May 2017a.
- W2 [Samuel Gutiérrez](#), [Dorian Arnold](#), Kei Davis, and Patrick McCormick. On the Memory Attribution Problem: A Solution and Case Study Using MPI. In *ExaMPI2017 - Workshop on Exascale MPI 2017*, Denver, CO, USA, November 2017c.
- W3 [Samuel Gutiérrez](#), [Dorian Arnold](#), Kei Davis, and Patrick McCormick. On the Memory Attribution Problem: A Solution and Case Study Using MPI. In *Workshop on Exascale MPI 2017 (ExaMPI2017)*, Denver, CO, USA, November 2017b.
- C4 [Taylor Groves](#), Ryan Grant, Scott Hemmert, Simon Hammond, Michael Levenhagen, and [Dorian Arnold](#). (SAI) Stalled, Active and Idle: Characterizing Power and Performance of Large-Scale Dragonfly Networks. In *2016 IEEE International Cluster Conference (Cluster)*, pages 253–262, Taipei, Taiwan, September 2016a.
- C5 [Taylor Groves](#), Ryan Grant, and [Dorian Arnold](#). NiMC: Characterizing and Eliminating Network-Induced Memory Contention. In *2016 IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, pages 253–262, Chicago, IL, USA, May 2016b.
- J8 [Ke Wang](#), [Abhishek Kulkarni](#), Michael Lang, [Dorian Arnold](#), and Ioan Raicu. Exploring the Design Tradeoffs for Extreme-Scale High-Performance Computing System Software. *IEEE Transactions on Parallel and Distributed Systems*, PP(99), 2015. ISSN 1045-9219.
- J9 [Dewan Ibtesham](#), Kurt B. Ferreira, and [Dorian Arnold](#). A Checkpoint Compression Study for High-Performance Computing Systems. *International Journal of High Performance Computing Applications*, 29:387–402, November 2015.
- W4 Alireza Goudarzi, [Dorian Arnold](#), Darko Stefanovic, Kurt Ferreira, and Guy Feldman. A Principled Approach to HPC Event Monitoring. In *5th Workshop on Fault Tolerance for HPC at eXtreme Scale (FTXS '15)*, pages 3–10, 2015. ISBN 978-1-4503-3569-0. Best Paper Runner-Up.

- W5 **Dorian Arnold**. Fiesta: A Framework for Introspective Extreme Scale Tools and Applications. In Advanced Scientific Computing Research Machine Learning Workshop, January 2015. Position abstract.
- W6 Kurt Ferreira, Scott Levy, Patrick Widener, and **Dorian Arnold**. Using Machine Learning to Optimize Uncoordinated Checkpointing Performance. In Advanced Scientific Computing Research Machine Learning Workshop, January 2015. Position abstract.
- C6 Kurt Ferreira, Patrick Widener, [Scott Levy](#), **Dorian Arnold**, and Torsten Hoefler. Understanding the Effects of Communication on Uncoordinated Checkpointing at Scale. In *International Conference for High Performance Computing, Networking, Storage and Analysis (SC '14)*, New Orleans, LA, USA, November 2014b. Acceptance rate: 82/394, 21%.
- J10 Kurt Ferreira, Rolf Riesen, Patrick Bridges, **Dorian Arnold**, and Ron Brightwell. Accelerating Incremental Checkpointing for Extreme-scale Computing. *Future Generation Computer Systems, Special Issue on Extreme Scale Parallel Architectures and Systems, Cryptography in Cloud Computing and Recent Advances in Parallel and Distributed Systems, ICPADS 2012 Selected Papers*, 30, January 2014a.
- W7 [Dewan Ibtisham](#), [David DeBonis](#), Kurt Ferreira, and **Dorian Arnold**. Coarse-grained Energy Modeling of Rollback/Recovery Mechanisms. In The 4th Fault Tolerance for HPC at eXtreme Scale (FTXS 2014), June 2014.
- C7 [Ke Wang](#), [Abhishek Kulkarni](#), Michael Lang, **Dorian Arnold**, and Ioan Raicu. Using Simulation to Explore Distributed Key-value Stores for Extreme-scale System Services. In *International Conference for High Performance Computing, Networking, Storage and Analysis (SC '13)*, Denver, CO, USA, November 2013. ACM. ISBN 978-1-4503-2378-9. Acceptance rate: 92/457, 20%.
- C8 [Joshua Goehner](#), [Taylor Groves](#), **Dorian Arnold**, Dong H Ahn, and Gregory L Lee. An Optimal Algorithm for Extreme Scale Job Launching. In *12th IEEE International Conference on Trust, Security and Privacy in Computing and Communications (TrustCom)*, pages 1115–1122, Melbourne, Australia, 2013. IEEE. Appeared in The 11th IEEE International Symposium on Parallel and Distributed Processing with Applications (ISPA-13), July 16-18, 2013, Melbourne, Australia. Published in the described proceedings.
- W8 [George Bezerra](#), **Dorian Arnold**, and Stephanie Forrest. Empirical and Theoretical Lower Bounds on Energy Consumption for Networks on Chip. In Sixth International Workshop on Network on Chip Architectures (NoCArc '13), December 2013.
- W9 [Philip Soltero](#), Patrick Bridges, **Dorian Arnold**, and Michael Lang. A Gossip-based Approach to Exascale System Services. In *International Workshop on Runtime and Operating Systems for Supercomputers (ROSS 2013)*, page 3, Eugene, Oregon, U.S.A., June 2013. ACM.
- W10 Patrick Widener, Kurt Brian Ferreira, Scott Levy, Ronald Brightwell, Patrick Bridges, and **Dorian Arnold**. Asking the Right Questions: Benchmarking Fault-tolerant Extreme-scale Systems. 6th Workshop on Resiliency in High Performance Computing (Resilience) in Clusters, Clouds, and Grids, August 2013.
- W11 Kurt Ferreira, Rolf Riesen, **Dorian Arnold**, [Dewan Ibtisham](#), and Ron Brightwell. The Viability of Using Compression to Decrease Message Log Sizes. In Euro-Par 2012: Parallel Processing Workshops, 2013a.
- W12 [Scott Levy](#), [Bryan Topp](#), Kurt Ferreira, **Dorian Arnold**, Torsten Hoefler, and Patrick Widener. Using Simulation to Evaluate the Performance of Resilience Strategies at Scale. In 4th International Workshop on Performance Modeling, Benchmarking and Simulation of High Performance Computer Systems (PMBS13), November 2013.
- W13 [Taylor Groves](#), Yihua He, and **Dorian Arnold**. In-network, Push-based Network Resource Monitoring. In 3rd IEEE/ACM International Workshop on Network-aware Data Management (NDM 2013), November 2013.
- W14 Barton Miller, **Dorian Arnold** Michael Brim, Philip Roth, Evan Samanas, Benjamin Welton, and Bill Williams. Building on Lessons Learned From Over a Decade of MRNet Research and Development. In Extreme Scale Programming Tools Workshop, November 2013.

- J11 Patrick Bridges, [Dorian Arnold](#), Kevin Pedretti, Madhav Suresh, Feng Lu, Peter Dinda, Russ Joseph, and Jack Lange. Virtual-machine-based Emulation of Future Generation High-performance Computing Systems. *International Journal of High Performance Computing Applications*, 26(2):125–135, 2012.
- J12 [Joshua Goehner](#), [Dorian Arnold](#), Dong Ahn, Gregory Lee, Bronis de Supinski, Matthew LeGendre, Bronis Miller, and Martin Schulz. LIBI : A Framework for Bootstrapping Extreme Scale Software Systems. *Parallel Computing*, October 2012.
- C9 Rolf Riesen, Kurt Ferreira, Dilma Da Silva, Pierre Lemarinier, [Dorian Arnold](#), and Patrick G Bridges. Alleviating Scalability Issues of Checkpointing Protocols. In *High Performance Computing, Networking, Storage and Analysis (SC), 2012 International Conference for*, pages 1–11, Salt Lake City, Utah, USA, 2012. IEEE. Acceptance rate: 100/472, 21%.
- C10 [Dewan Ibtisham](#), [Dorian Arnold](#), Kurt Ferreira, and Patrick Bridges. On the Viability of Compression for Reducing the Overheads of Checkpoint/restart-based Fault Tolerance. In *Parallel Processing (ICPP), 2012 41st International Conference on*, pages 148–157, Pittsburgh, Pennsylvania, USA, September 2012. IEEE. Acceptance rate: 53/187, 28%.
- W15 Jon Stearley, Kurt Ferreira, David Robinson, Jim Laros, Kevin Pedretti, [Dorian Arnold](#), Patrick Bridges, and Rolf Riesen. Does Partial Replication Pay Off? In *IEEE/IFIP 42nd International Conference on Dependable Systems and Networks Workshops (DSN-W)*, 2012.
- W16 Kurt Ferreira, Rolf Riesen, [Dorian Arnold](#), [Dewan Ibtisham](#), and Ron Brightwell. The Viability of Using Compression to Decrease Message Log Sizes. In *5th Workshop on Resiliency in High Performance Computing in Clusters, Clouds, and Grids (Resilience)*, August 2012.
- W17 Scott Levy, Kurt Ferreira, Patrick Bridges, [Dorian Arnold](#), and David Fiala. Exploiting content similarity to improve memory performance in exascale systems. In *Workshop on Exascale Operating Systems and Runtime Software*, October 2012. Short abstract.
- W18 [Dorian Arnold](#), Patrick Bridges, Kurt Ferreira, David Lowenthal, and Martin Schulz. Run-time support for intergrated power and resilience management. In *Workshop on Exascale Operating Systems and Runtime Software*, October 2012. Short abstract.
- C11 Kurt Ferreira, Jon Stearley, James Laros III, Ron Oldfield, Kevin Pedretti, Ron Brightwell, Rolf Riesen, Patrick Bridges, and [Dorian Arnold](#). Evaluating the Viability of Process Replication Reliability for Exascale Systems. In *International Conference for High Performance Computing, Networking, Storage and Analysis (SC '11)*, page 44, Seattle, Washington, USA, November 2011b. ACM. Acceptance rate: 74/352, 21%.
- C12 Kurt Ferreira, Rolf Riesen, Ron Brightwell, Patrick Bridges, and [Dorian Arnold](#). Libhashckpt: Hash-based Incremental Checkpointing Using GPU's. In *18th European MPI Users' Group conference on Recent advances in the message passing interface (EuroMPI '11)*, pages 272–281, Santorini, Greece, September 2011a. Springer-Verlag. Acceptance rate: 81/271, 29.9%.
- W19 Patrick Bridges, [Dorian Arnold](#), and Kevin Pedretti. VM-based Slack Emulation of Large-scale Systems. In *1st International Workshop on Runtime and Operating Systems for Supercomputers*, 2011.
- W20 [Roy Keyes](#), [Dorian Arnold](#), Amy Reynaud, and Shuang Luan. McCloud: Toward 10 Million Monte Carlo Primaries in 5 Minutes for Clinical Use. In *The 53rd Annual Meeting of American Association of Physicists in Medicine (AAPM)*, 2011. Refereed abstract and poster presentation.
- C13 [Dorian Arnold](#) and Barton Miller. Scalable Failure Recovery for High-performance Data Aggregation. In *24th IEEE International Parallel & Distributed Processing Symposium (IPDPS)*, pages 1–11, Atlanta, GA, USA, April 2010. IEEE. Acceptance rate: 127/527, 24%.
- C14 [Roy Keyes](#), [Cristian Romano](#), [Dorian Arnold](#), and Shuang Luan. Cloud Computing as a Monte Carlo Cluster for Radiation Therapy. In *XVth International Conference on the Use of Computers in Radiation Therapy (ICCR)*, 2010a.

- J13 Aroon Nataraj, Allen Malony, Alan Morris, **Dorian Arnold**, and Barton Miller. A Framework for Scalable, Parallel Performance Monitoring. *Concurrency and Computation: Practice and Experience*, 22(6):720–735, 2010. First appeared in the International Workshop on Scalable Tools for High-End Computing (STHEC 2008), Island of Kos, Greece.
- W21 **Roy Keyes**, **Cristian Romano**, **Dorian Arnold**, and Shuang Luan. Medical Physics Calculations in the Cloud: A New Paradigm for Clinical Computing. In *The 52nd Annual Meeting of American Association of Physicists in Medicine (AAPM)*, 2010b. Refereed abstract and poster presentation.
- C15 Gregory Lee, Dong Ahn, **Dorian Arnold**, Bronis De Supinski, Matthew Legendre, Barton Miller, Martin Schulz, and Ben Liblit. Lessons Learned at 208k: Towards Debugging Millions of Cores. In *ACM/IEEE International Conference for High Performance Computing, Networking, Storage and Analysis (SC '08)*, Austin, TX, USA, November 2008. IEEE. Acceptance rate: 59/277, 21.3%.
- C16 Dong Ahn, **Dorian Arnold**, Bronis Supinski, Gregory Lee, Barton Miller, and Martin Schulz. Overcoming Scalability Challenges for Tool Daemon Launching. In *37th International Conference on Parallel Processing (ICPP-08)*, pages 578–585, Portland, OR, USA, September 2008. IEEE. Acceptance rate: 81/263: 30.8%.
- C17 Aroon Nataraj, Allen Malony, Allen Morris, **Dorian Arnold**, and Barton Miller. In Search of Sweet-spots in Parallel Performance Monitoring. In *2008 IEEE International Conference on Cluster Computing (Cluster 2008)*, pages 69–78, Tsukuba, Japan, September 2008. IEEE. Acceptance rate: 28/92: 30.4%.
- C18 **Dorian Arnold**, Dong Ahn, de Supinski Bronis, Gregory Lee, Barton Miller, and Martin Schulz. Stack Trace Analysis for Large Scale Applications. In *21st IEEE International Parallel & Distributed Processing Symposium (IPDPS '07)*, Long Beach, CA, Long Beach, CA, USA, March 2007. Acceptance rate: 109/419: 26.0%.
- C19 Gregory Lee, Dong Ahn, **Dorian Arnold**, Bronis De Supinski, Barton Miller, and Martin Schulz. Benchmarking the Stack Trace Analysis Tool for BlueGene/L. In *Parallel Computing 2007*, pages 621–628, September 2007.
- W22 **Dorian Arnold**, Gary Pack, and Barton Miller. Tree-based Computing for Scalable Applications. In 11th International Workshop on High-Level Parallel Programming Models and Supportive Environments, 2006.
- J14 Manish Parashar, Rajeev Muralidhar, Wonsuck Lee, **Dorian Arnold**, Jack Dongarra, and Mary Wheeler. Enabling Interactive and Collaborative Oil Reservoir Simulations on the Grid. *Concurrency and Computation: Practice and Experience*, 17(11):1387–1414, 2005.
- W23 Philip Roth, **Dorian Arnold**, and Barton Miller. Benchmarking the MRNet Distributed Tool Infrastructure: Lessons Learned. In 18th International Parallel and Distributed Processing Symposium, 2004.
- C20 Phillip Roth, **Dorian Arnold**, and Barton Miller. MRNet: A Software-based Multicast/reduction Network for Scalable Tools. In *IEEE conference on Supercomputing (SC '03)*, page 21, Phoenix, AZ, USA, November 2003. Acceptance rate: 60/207: 29.0%.
- J15 **Dorian Arnold**, Henri Casanova, and Jack Dongarra. Innovations of the NetSolve Grid Computing System. *Concurrency and computation: practice and experience*, 14(13-15):1457–1479, 2002.
- J16 Micah Beck, **Dorian Arnold**, Alessandro Bassi, Fran Berman, Henri Casanova, Jack Dongarra, Terry Moore, Graziano Obertelli, James Plank, Martin Swamy, et al. Middleware for the Use of Storage in Communication. *Parallel Computing*, 28(12):1773–1787, 2002. Also appeared in Third Annual International Workshop on Active Middleware Services.
- J17 **Dorian Arnold**, Sathish S. Vahdiyar, and Jack J. Dongarra. On the Convergence of Computational and Data Grids. *Parallel Processing Letters*, 11(02n03):187–202, 2001.
- W24 **Dorian Arnold** and Jack J. Dongarra. Developing an Architecture to Support the Implementation and Development of Scientific Computing Applications. *The Architecture of Scientific Software (IFIP TC2/WG2.5)*, 60:39–55, October 2001.
- W25 Shirley Moore, **Dorian Arnold**, and David Cronk. Metacomputing Support for the SARA3D Structural Acoustics Application. In *DoD Users' Group Conference*, Biloxi, MS, USA, June 2001.

- C21 **Dorian Arnold**, Dieter Bachmann, and Jack Dongarra. Request Sequencing: Optimizing Communication for the Grid. In *6th International Euro-Par Conference – Parallel Processing (Euro-Par 2000)*, pages 1213–1222, Munich, Germany, September 2000a. Springer. Acceptance rate: 167/326: 51.2%.
- C22 **Dorian Arnold**, Wonsuck Lee, Jack Dongarra, and Mary Wheeler. Providing Infrastructure and Interface to High-performance Applications in a Distributed Setting. In *High Performance Computing 2000*, pages 248–253. Society for Computer Simulation International, 2000d.
- W26 David Cronk, Graham Fagg, Brett Ellis, and **Dorian Arnold**. Metacomputing: An Evaluation of Emerging Systems. Technical Report TR/00-17, U.S. Army Engineer Research and Development Center Major Shared Resource Center, April 2000.
- W27 **Dorian Arnold**, Susan Blackford, Jack Dongarra, Victor Eijkhout, and Tinghua Xu. Seamless Access to Adaptive Solver Algorithms. In *SGI Users' Conference (Also in 16th IMACS WORLD CONGRESS 2000 on Scientific Computation, Applied Mathematics and Simulation Aug. 2000)*, pages 23–30, 2000b.
- W28 **Dorian Arnold**, Shirley Browne, Jack Dongarra, Graham Fagg, and Keith Moore. Secure Remote Access to Numerical Software and Computational Hardware. In *DoD High-Performance Computing Modernization Program Users Group Conference*, 2000c.
- W29 **Dorian Arnold** and Jack Dongarra. The Netsolve Environment: Progressing Towards the Seamless Grid. In 2000 International Workshops on Parallel Processing, 2000.

### Book Chapters

- B1 Mary Wheeler, Wonsuck Lee, Clint Dawson, **Dorian Arnold**, Tahsin Kurc, Manish Parashar, Joel Saltz, and Alan Sussman. *Parallel Computing in Environment and Energy*, chapter 6, pages 145–165. Morgan Kaufmann Publishers Inc., 2003.
- B2 Geoffrey Fox, Jack Dongarra, **Dorian Arnold**, Henri Casanova, Ann Christine Catlin, Tomasz Haupt, Elias Houstis, and John Rice. *Problem-solving Environments*, chapter 14, pages 409–442. Morgan Kaufmann Publishers Inc., 2003.

### Other Technical Reports

- T1 Lois Curfman McInnes, me, Prasanna Balaprakash, Mike Bernhardt, Beth Cerny, Anshu Dubey, Roscoe Giles, Denice Ward Hood, Mary Ann Leung, Vanessa Lopez-Marrero, Paul Messina, Olivia B. Newton, Chris Oehmen, Stefan M. Wild, Jim Willenbring, Lou Woodley, Tony Baylis, David E. Bernholdt, Chris Camano, Johannah Cohoon, Charles Ferenbaugh, Stephen M. Fiore, Sandra Gesing, Diego Gomez-Zara, James Howison, Tanzima Islam, David Kepczynski, Charles Lively, Harshitha Menon, Bronson Messer, Marieme Ngom, Umesh Paliath, Michael E. Papka, Irene Qualters, Elaine M. Raybourn, Katherine Riley, Paulina Rodriguez, Damian Rouson, Michelle Schwalbe, Sudip K. Seal, Ozge Surer, Valerie Taylor, and Lingfei Wu. Report of the 2025 workshop on next-generation ecosystems for scientific computing: Harnessing community, software, and ai for cross-disciplinary team science. Technical Report 47, Argonne National Laboratory, 2025. URL <https://arxiv.org/abs/2510.03413>.
- T2 Kurt Brian Ferreira, Kevin Pedretti, **Dorian Arnold**, Scott N Levy, and Patrick Bridges. Protect Yourself: Why Your OS Must Protect Against DRAM Failures. Technical report, Sandia National Laboratories, 2013b.
- T3 **Dorian Arnold**. *Reliable, Scalable Tree-based Overlay Networks*. PhD thesis, University of Wisconsin–Madison, December 2008.
- T4 **Dorian Arnold**, Sudesh Agrawal, Susan Blackford, Jack Dongarra, Christoph Fabianek, Tomo Hiroyasu, Eric Meek, Michelle Miller, Kiran Sagi, Keith Seymour, et al. User's Guide to NetSolve V2.0. Technical report, University of Tennessee, 2004.
- T5 Lois Curfman McInnes, Anshu Dubey, **Dorian Arnold**, Prasanna Balaprakash, Mike Bernhardt, Beth Cerny, Denice Ward Hood, Mary Ann Leung, Olivia B. Newton, and Stefan M. Wild. Ecosystems for Scientific Computing in the Age of AI, 2026. Under Review.
- T6 **Nichole Etienne** and Simon Garcia de Gonzalo and me. Survey on the Automatic Synthesis of Benchmarks and Proxy Apps, 2026. Under Review.

- T7 [Nichole Etienne](#) and Simon Garcia de Gonzalo and [Dorian Arnold](#). Automatic Synthesis of HPC Application Traces, 2026. Under Preparation.
- T8 [Nichole Etienne](#) and [Carson Woods](#) and Tony Pan and Simon Garcia de Gonzalo and me. A Multi-Motif Evaluation of LLMs for OpenMP Code Translation and Generation, 2026. Under Preparation.
- T9 [Carson Woods](#) and [Nichole Etienne](#) and Simon Garcia de Gonzalo and Tony Pan and me. ParaLLM: A Framework for Automatic Code Parallelization with Large-Language Models, 2026a. Under Preparation.
- T10 [Carson Woods](#) and [Nichole Etienne](#) and Simon Garcia de Gonzalo and Tony Pan and me. Understanding and Quantifying Personal Computing Inefficiencies, 2026b. Under Preparation.
- T11 [Tianyi Cong](#) and Stephen Harrell and me. On the Stability and Volatility High-Performance Computing Monitoring Data, 2026a. Under Preparation.
- T12 [Tianyi Cong](#) and Stephen Harrell and me. A Comprehensive Survey and Comparative Analysis of HPC Monitoring Systems, 2026b. Under Preparation.

### Patents Granted

- T13 [Keyes, Roy William, Romano, Christian](#), Shuang Luan, and [Dorian Arnold](#). System and Methods for Performing Medical Physics Calculation, October 2017. US Patent 9805170.

## External Research Funding

### Funding Statistics

- \$13.5M **Total Project budget**, amongst collaborating institutions
- \$4.1M **Total University budget**
- \$3.6M **Total University budget committed to [Dorian Arnold](#)**
- \$2.9M **Total University budget with [Dorian Arnold](#) as principal investigator**
- \$200K **Sandia National Laboratories**, *Synthesizing HPC Network Benchmarks and Proxy Apps*, January 2024 – September 2024, [Dorian Arnold](#), Lead Principal Investigator  
Emory budget: \$200K; Arnold budget: \$200K.
- \$123K **Sandia National Laboratories**, *Emory ML Similarity and Data Discovery Project*, March 2023 – September 2024, [Dorian Arnold](#), Lead Principal Investigator  
Emory budget: \$60K; Arnold budget: \$123K.
- \$100K **Sandia National Laboratories**, *Scaling and Accuracy Issues in Floating Point Applications*, March 2022 – September 2022, [Dorian Arnold](#), Lead Principal Investigator  
Emory budget: \$100K; Arnold budget: \$100K.
- \$884K **National Science Foundation**, *SHF: Medium: Collaborative Research: Toward Extreme Scale Fault-Tolerance: Exploration Methods, Comparative Studies and Decision Processes*, August 2016 – July 2022, [Dorian Arnold](#), Lead Principal Investigator  
Emory budget: \$354K; Arnold budget: \$354K. (Project transferred from UNM to Emory.)
- \$805K **Cray Inc.**, *Cray/Emory High-Performance Computing Software Testing Partnership*, September 2017 – July 2020, [Dorian Arnold](#), Principal Investigator  
Emory budget: \$805K; Arnold budget: \$805K;
- \$7.5M **Department of Energy**, *Hobbes: OS and Runtime Support for Application Composition*, October 2013 – November 2017, Patrick Bridges, UNM Principal Investigator; [Dorian Arnold](#), co-Principal Investigator  
UNM budget: \$450K; Arnold budget: \$225K
- \$800K **Cray Inc.**, *Cray Software Testing Partnership (A Perrenial Partnership)*, May 2014 – August 2017, [Dorian Arnold](#), Principal Investigator  
UNM budget: \$800K; Arnold budget: \$800K;
- \$96K **Los Alamos National Laboratory**, *Exascale Resource Monitoring Tools and Workloads*, [Dorian Arnold](#), Principal Investigator, February 2015 – June 2017  
UNM budget: \$96K; Arnold budget: \$92K;

- \$29K **Computing Research Association**, *The HPC Pipeline Workshop: Diversifying the HPC Workforce*, **Dorian Arnold**, Principal Investigator, August 2016 – March 2017  
UNM budget: \$29K; Arnold budget: \$29K;
- \$103K **RNET Technologies, Inc.**, *Power Management in MPI Implementations*, January 2014 – August 2014, Patrick Bridges, Principal Investigator; **Dorian Arnold**, co-Principal Investigator  
UNM budget: \$103K; Arnold budget: \$51.5K
- \$2.4M **Department of Energy**, *Enabling Exascale Hardware and Software Design through Scalable System Virtualization*, October, 2010 - February, 2014, Patrick Bridges, UNM Principal Investigator, **Dorian Arnold**, co-Principal Investigator  
UNM budget: \$625K; Arnold budget: \$312K
- \$66K **Lawrence Livermore National Laboratory**, *Improving Tool Startup*, March, 2013 – April, 2014, **Dorian Arnold**, Principal Investigator  
UNM budget: \$66K; Arnold budget: \$66K;
- \$104K **Los Alamos National Laboratory**, *Ultrascale Research Center Resilient System Software*, August, 2011 - September, 2013, **Dorian Arnold**, Principal Investigator  
UNM budget: \$104K; Arnold budget: \$104K;
- \$62K **Sandia National Laboratories**, *Extreme Scale Application Resilience*, January, 2013 – March, 2014, **Dorian Arnold**, Principal Investigator  
UNM budget: \$62K; Arnold budget: \$62K;
- \$65K **Lawrence Livermore National Laboratory**, *Toward Autonomous Tool Infrastructure: Improving MRNet for TLCC Environments*, October, 2011 - March, 2013, **Dorian Arnold**, Principal Investigator  
UNM budget: \$65K; Arnold budget: \$65K;
- \$75K **Sandia National Laboratory**, *Extreme Scale Checkpointing*, March, 2012 – September, 2012, **Dorian Arnold**, Principal Investigator  
UNM budget: \$75K; Arnold budget: \$75K;
- \$52K **Sandia National Laboratory**, *A Study of the Impact of Checkpoint Models on Application Performance*, May, 2010 – September, 2011, **Dorian Arnold**, Principal Investigator  
UNM budget: \$52K; Arnold budget: \$52K;
- \$65K **Lawrence Livermore National Laboratory**, *MRNet/STAT Advancements for the Common Computing Environment TLCC Systems*, April, 2010 - December, 2010, **Dorian Arnold**, Principal Investigator  
UNM budget: \$65K; Arnold budget: \$65K;
- \$11K **National Science Foundation**, *PACT 2009 Student Travel Scholarships*, August, 2009 - July, 2010, **Dorian Arnold**, Principal Investigator
- Hardware Contributions**
- \$663 **NVIDIA Corporation**, *One (1) Nvidia Tesla c2075 Computing Processor via The NVIDIA University Partnership Program*, July 2012, **Dorian Arnold**, Principal Investigator

## Invited Presentations and Panels

### Keynote and Plenary Talks

- 2026 **Plenary**: "Strategies for Human-Human Interaction", co-Presenter, CRA-WP UNM Cohort Workshop, February, 2019.
- 2025 **Keynote**: Latin America High Performance Computing Conference (CARLA), Kingston, Jamaica, September 2025. (Canceled due to Family Emergency)
- 2024 **Keynote**: "From Data-Driven Designs to Data-Driven Co-Design", Fourth International Symposium on Quantitative Codesign of Supercomputers, Atlanta, GA, November 2025.  
**Keynote**: "Black or African American in Computing: Does it Matter?", Black Issues in Computing Education Symposium, Santo Domingo, The Dominican Republic, February 2024.
- 2023 **Plenary**: General Chair Address, SC23, Denver, CO, USA, November 2023.

- Invited Talk:** "Establishing a Workforce", Sustainable Tools Ecosystem Project West Coast Townhall, San Francisco, CA, August 16-17, 2023.
- 2019 **Keynote:** "Network and Communication Advances for 'Big' Applications, Data & Systems", Scalable Networks for Advanced Computing Workshop, Rio de Janeiro, Brazil, May 2019.
- Plenary:** "Strategies for Human-Human Interaction", Moderator and Panelist, CRA URMD Grad Cohort Workshop, Waikoloa, HI, March 2019.
- 2018 **Plenary:** "Strategies for Human-Human Interaction", Panel Moderator, CRA URMD Grad Cohort Workshop, San Diego, CA, March 2018.
- 2017 **Plenary:** General Chair Address, 2017 Tapia Conference, Atlanta, GA, USA, September 2017.
- 2016 **Plenary:** Program Chair Address, 2016 Tapia Conference, Austin TX, September 2016.

### Professional Presentations

- 2025 "From Constitution to Action: A Diaspora Policy", Panelist, Belize Diaspora Summit 2.0, Fort Lauderdale, FL, July 10-12, 2025.
- "Bright lights: Exemplar approaches for scientific computing ecosystems", Panelist, Toward Next-Generation Ecosystems for Scientific Computing Workshop, Chicago, IL, May 1, 2025.
- "Career Insights for Aspiring HPC Professionals: Considering AI & other Disruptive Technologies", Supercomputing@GT, Georgia Inst. of Technology, Atlanta, GA, March 25, 2025.
- 2024 "AI-Generated HPC Application Stand-ins", Workshop on Clusters, Clouds, and Data for Scientific Computing, Lyon, France, September 2024.
- "Preparing Your Thesis Proposal and Becoming a Ph.D. Candidate", Co-Presenter, CRA-WP IDEALS Workshop, Minneapolis, MN, March 2024.
- "The Need for Greater Diversity and Ways to Increase Diversity in HPC/AI", Panelist, 84th HPC User Forum, Reston, VA April 2024.
- 2023 "Early-Career: Promotion to the Next Level", CRA-WP Early and Mid Career Mentoring Workshop, Chicago, IL, November 2023.
- "Early-Career: Managing Up/Down", CRA-WP Early and Mid Career Mentoring Workshop, Chicago, IL, November 2023.
- "Establishing a Sustainable Workforce", DOE/ASCR Software Tools Ecosystem Project West Coast Townhall, San Francisco, CA, August 2023.
- "BP(HP)C: Broadening Participation in (High-Performance) Computing", Salishan Conference on High-Speed Computing, Gleneden Beach, OR, April 2023.
- "Challenges and Successes in Writing BPC Plans for NSF Proposals", Panelist, SIGCSE Technical Symposium, Toronto, CA, March 2023.
- "Departmental BPC Plans 1 – Getting Started: Selecting Goals and Activities for Broadening Participation in Computing", Workshop Organizer and Presenter, SIGCSE Technical Symposium, Toronto, CA, March 2023.
- "Departmental BPC Plans 2 – Finalizing your Plan: Context, Style, Formatting, and Verification on BPCnet.org", Workshop Organizer and Presenter, SIGCSE Technical Symposium, Toronto, CA, March 2023.
- "Preparing Your Thesis Proposal and Becoming a Ph.D. Candidate", Co-Presenter, CRA-WP IDEALS Workshop, Honolulu, HI March 2023.
- 2022 "Reinventing High-Performance Computing", Panelist, SC22: The International Conference for High Performance Computing, Networking, Storage, and Analysis, Dallas, TX, November 2022.
- "BP(HP)C: Broadening Participation in (High-Performance) Computing", Workshop on Clusters, Clouds, and Data for Scientific Computing, Lyon, France, September 2022.
- "Overcoming Insufficient Academic Preparation: Perceived and Real", Co-Presenter, CRA-WP IDEALS Workshop, San Diego, CA, March 2022.

- "Preparing Your Thesis Proposal and Becoming a Ph.D. Candidate", Co-Presenter, CRA-WP IDEALS Workshop, San Diego, CA, March 2022.
- 2021 "Preparing Your Thesis Proposal and Becoming a Ph.D. Candidate", Co-Presenter, CRA-WP IDEALS Workshop, March 2021.
- "Finding a Research Topic & Interdisciplinary Research", Co-Presenter, CRA-WP IDEALS Workshop, March 2021.
- 2020 "Preparing Your Thesis Proposal and Becoming a Ph.D. Candidate", Co-Presenter, CRA URMD Grad Cohort Workshop, Austin, TX, March 2020.
- 2019 "Emerging HPC Networking Technologies and Adaptive Parallel Programming Environments", Clemson University, Clemson, SC, USA, October 2019.
- "Computer Networking Technology Evolution for Big Applications and Systems", University of Tennessee, Chattanooga, TN, October 2019.
- "Computer Systems Research for High Performance Computing", Swarthmore College, Swarthmore, PA, September 2019.
- "Overcoming Workplace Challenges: Trials, Tribulations, and Triumphs", Panel, 2019 Tapia Conference, San Diego, CA, USA, September 2019.
- "Adaptive Parallelism for Coupled, Multithreaded Message-Passing Programs", 14th Scheduling for Large Scale Systems Workshop, Bordeaux, France, June 2019.
- "Big Deal, Little Deal or No Deal? Perspectives on the HPC Resilience Challenge", SOS 23 Workshop, Asheville, NC, March 2019.
- "Publishing Your Research", Co-Presenter, CRA URMD Grad Cohort Workshop, Waikoloa, HI, March 2019.
- 2018 "Big Deal, Little Deal or No Deal? The Realities of the HPC Resilience Challenge", Workshop on Clusters, Clouds, and Data for Scientific Computing, Lyon, France, September 2018.
- "Recent Ventures in Emerging HPC Networking Technologies and Adaptive Parallel Programming Environments", Cray Tech Talk, Bloomington, MN, August 2018.
- "Preparing Your Thesis Proposal and Becoming a Ph.D. Candidate", Co-Presenter, CRA URMD Grad Cohort Workshop, San Diego, CA, March 2018.
- 2017 "Silent Errors in HPC Systems", Panel, SC17, Denver, CO, USA, November 2017.
- "Professional Networks and Collaborations", Early Career Program, SC17, Denver, CO, USA, November 2017.
- "Professional Path and Lessons Learned", HPC for Undergraduates Program, SC17, Denver, CO, USA, November 2017.
- "A Resource Management Proposition for Applications, Tools and Services on Extreme Scale Platforms", 12th Scheduling for Large Scale Systems Workshop, Knoxville TN, May 2017.
- "The SMURFS Project: Simulation and Modeling for Understanding Resilience and Faults at Scale", University of Tennessee, Knoxville, TN, USA, March 2017.
- "The SMURFS Project: Simulation and Modeling for Understanding Resilience and Faults at Scale", Washington University, St. Louis, MO, USA, March 2017.
- "The SMURFS Project: Simulation and Modeling for Understanding Resilience and Faults at Scale", Emory University, Atlanta, GA, USA, February, 2017.
- 2016 "An Overview of My Research Projects", Innovative Computing Lab Retreat, Maryville, TN, USA, August 2016.
- Students@SC Program Orientation, Salt Lake City UT, November 2016.
- 2015 "A Non-checkpoint/restart, Non-algorithm-specific Approach to Fault-tolerance", Sandia National Laboratory, Livermore CA

- Students@SC Program Orientation, Austin TX, November 2015.
- 2014 "A Simulation-based Framework for Evaluating Resilience Strategies at Scale", University of Utah, Salt Lake City, UT, USA, October, 2014.  
"A Non-checkpoint/restart, Non-algorithm-specific Approach to Fault-tolerance", Dagstuhl Seminar on Resilience in Exascale Computing, Schloss Dagstuhl, Germany, September 2014  
"Scalable Middleware and Tools for HPC", New Mexico State University, Las Cruces NM, USA, September 2014.  
"Scalable Middleware and Tools for HPC", University of Texas at El Paso, El Paso TX, USA, September 2014.  
"Toward Exascale Tool Infrastructure", Petascale Tools Workshop, Madison WI, August 2014.  
"Toward HPC Runtimes that Self-adapt to your Math", Institute for Computational and Experimental Research in Mathematics, Brown University, Providence, RI, USA, July 2014.  
"A simulation-based framework for evaluating applications at scale", Cray Computing Seminar, Cray Inc., St. Paul, MN, USA, July 2014.  
"A Simulation-based Framework for Evaluating Resilience Strategies at Scale", University of Tennessee, Knoxville, TN, USA, April 2014.  
"A Non-checkpoint/restart, Non-algorithm-specific Approach to Fault-tolerance", Sandia National Laboratories, Livermore, CA, USA, January 2014
- 2013 "Current and Planned LIBI Developments", Petascale Tools Workshop, University of Wisconsin, Madison, WI, USA, July 2013.  
"An Optimal Algorithm for Extreme Scale Job Launch", Paradyn/HTCondor Week, University of Wisconsin, Madison, WI, USA, April 2013.
- 2012 "A (Brief) LIBI Update and Other MRNet-related Stuff", Performance Tools for Extreme-scale Computing, Snowbird, Utah, USA, June 2012.
- 2011 "On the Viability of Checkpoint Compression for Extreme Scale Fault Tolerance", Workshop on Resiliency in High-Performance Computing in Clusters, Clouds, and Grids (Resilience 2011), Bordeaux, France, September 2011.  
"LIBI Status Update and Future Directions", Performance Tools for Extreme Scale Computing, Tahoe City, CA, USA, August 2011.  
"A Framework for Bootstrapping Extreme Scale Software Systems", Workshop on High-performance Infrastructure for Scalable Tools (WHIST), Tucson, AZ, USA, June 2011.  
"LIBI: The Lightweight Infrastructure-Bootstrapping Infrastructure", Paradyn/Condor Week, University of Wisconsin, Madison, WI, USA, May 2011.
- 2010 "Improving Tool Startup and Runtime Performance", Workshop on Performance Tools for Petascale Computing, Snowbird UT, USA, August 2010  
"Toward (More) Scalable, Autonomous Tool Infrastructure", Program Development for Extreme-Scale Computing, Dagstuhl Seminar, Schloss Dagstuhl, Germany, May 2010.
- 2009 "Autonomous Tool Infrastructure", Workshop on Performance Tools for Petascale Computing, Tahoe City, CA, USA, July 2009.
- [Pre-2009 Talks on High-Performance Computing Middleware and Tools](#)
- 2008 Performance Tools for Petascale Computing, Snowbird UT, July 2008  
Paradyn/Condor Week, University of Wisconsin, April 2008.
- 2007 SC PhD Showcase, Reno Nevada, November 2007.  
Paradyn/Condor Week, University of Wisconsin, March 2007.
- 2006 Portland State University, October, 2006.  
Lawrence Livermore National Laboratory, September 2006.

- Petascale Tools Strategy Workshop, IBM T.J. Watson, May 2006.
- Oak Ridge National Laboratory, April 2006.
- University of Tennessee, April 2006.
- Paradyn/Dyninst Week, University of Maryland, March 2006.
- 2005 Automated Performance Analysis, Dagstuhl, Germany, December 2005.
- Petascale Tools Strategy Workshop, IBM T.J. Watson, May 2005.
- Paradyn/Condor Week, University of Wisconsin, March 2005.
- 2004 Paradyn/Condor Week, University of Wisconsin, April 2004.
- 2003 Dyninst/Paradyn Week, University of Maryland, April 2003.
- 2002 Paradyn/Condor Week, University of Wisconsin, March 2002.

### Pre-2002 Talks on Grid Computing

- 2001 NPACI All-Hands Meeting, UCSD, March 2001. (Poster/Demo.)
- 2000 BBN Technologies, Mystic, Connecticut, December 2000.
- Clusters and Grids for Scientific Computing, Lyon, France, September 2000.
- Geographic Services Workshop, Greenbelt, MD, May 2000.
- NPACI All Hands Meeting, UCSD, February 2000. (Poster/Demo.)
- 1999 Center for Sub-surface Modeling, Austin, Texas, October 1999.
- University of Tennessee, Knoxville, April 1999.
- SC, Dallas, Texas, November 2000. (Poster/Demo.)
- SC, Portland, Oregon, November 1999. (Poster/Demo.)
- NCSA Chautauqua, Boston University, September 1999. (Poster/Demo.)

### Teaching

- Systems **Emory-CS 350: Systems Programming**, SP-26, FA-25, SP-24, FA-24, SP-24, FA-22, SP-22, SP-21, FA-20
- UNM-CS 341: Introduction to Computer Organization**, SP-15, SP-12
- UNM-CS 481: Operating Systems**, SP-17, SP-16, SP-15, SP-14, SP-13, SP-11, SP-09
- Adv. Systems **Emory-CS 559: Distributed Processing**, SP-18
- UNM-CS 587: Advanced Operating Systems**, FA-16, FA-14, FA-13, FA-11, FA-10
- UNM-CS 591: Autonomic Computing**, FA-12
- UNM-CS 591: Extreme Scale Computing**, SP-10
- Practicum **Emory-CS 370: Computer Science Practicum**, FA-19, FA-18, FA-17

### Research Advisement

#### Students

- Since 2024 Tianyi Cong, 1<sup>st</sup> year Ph.D. Student
- Since 2023 Carson Woods, 2<sup>nd</sup> year Ph.D. Student
- Since 2022 Nichole Ettienne, 4<sup>th</sup> year Ph.D. Student

#### Alumni

- PhD 2020 Whit Schonbein
- PhD 2018 Samuel Gutierrez, Los Alamos National Laboratory
- PhD 2017 Dewan Ibtesham, Amazon
- PhD 2017 Taylor Groves, Lawrence Berkeley National Laboratory
- M.S. 2025 Theodore Evans

M.S. 2021 Yibo Wang, University of Illinois Chicago  
M.S. 2017 Hans Weeks, 84.51°  
M.S. 2016 Aaron Gonzales, TripAdvisor  
M.S. 2015 Beverly Klemme, Intel Inc.  
M.S. 2014 Bryan Topp  
M.S. 2014 Lucille Frey, Los Alamos National Laboratory  
M.S. 2013 Zhenjie Chen, Bloomberg, Inc.  
M.S. 2011 Joshua Goehner, Rogue Wave Software, Inc. (Graduated with distinction)  
M.S. 2009 Samuel Gutierrez, Los Alamos National Laboratory  
B.S. 2026 Matthew Lafrance, Honors Thesis with highest honors  
B.S. 2022 Christina Chance, Honors Thesis with high honors  
B.S. 2022 Haochuan Feng, Honors Thesis with high honors  
B.S. 2022 Clarence Jiang  
B.S. 2020 Esteban Ramos  
B.S. 2018 Yuan Li  
B.S. 2018 Scott Weitzner  
B.S. 2017 Theodore (Alex) Evans.  
B.S. 2010 Christian Romano, co-advised w/ Prof. Shuang Luan.  
2014-2023 Evan Dye, Software Engineer.  
2018-2020 Douglas Obrecht, Software Engineer.

### Other Research Advisement

Summer 2013 Alireza Goudarzi, summer internship co-advised with Darko Stefanovic.  
Summer 2012 Julian Apodaca, UNM STEP Program  
Summer 2012 Zachary Falgout, UNM STEP Program  
Summer 2011 Nelson Burgos, Summer DREU Program  
Summer 2011 Jonathan Stoppani, co-advised w/ Prof. Patrick Bridges  
2011 – 2012 George Bezerra, co-advised HPC research w/ Prof. Stephanie Forrest

## Professional and Service Activities

### Distinguished/Leadership Activities

Ongoing Director, Computer Science and Informatics Graduate Program, Emory University, 2018–  
Board of Directors, Computing Research Association – Education Committee, 2023–  
Senior member, Institute of Electrical and Electronics Engineers, Since 2014  
2025 Member, SC Conference Steering Committee, 2020–2025 (Chair in 2024)  
2023 General Chair, SC Conference, 2023  
Program Evaluator, National Science Foundation Committee of Visitors  
2022 Deputy Chair, SC Conference, 2022  
2021 Chair, System Software Track, IEEE Intl. Parallel & Distributed Processing Symposium, 2021  
Chair, Tutorials, SC Conference, 2021  
2020 Distinguished Speaker, Association for Computing Machinery, 2017–2020  
2019 Associate Editor, IEEE Transactions on Parallel and Distributed Systems, 2015-2019  
Track Chair, Programming and System Software, IEEE Cluster, 2019  
Finance Liaison, Tech. Program, SC Conference, 2019  
Steering Committee, Workshop on Scalable Networks for Advanced Computing Systems, 2019

- 2018 Executive Committee, SC Conference, 2018  
Chair, Student Programs, SC Conference, 2018
- 2017 General Chair, ACM Richard Tapia Celebration of Diversity in Computing, 2017  
Vice/Deputy Chair, Student Programs, SC Conference, 2015-2017  
Steering Committee, SC Conference, 2017  
Chair, Early Career Program, SC Conference, 2017  
Co-Vice Chair, Systems Track, International Conference on Parallel Processing, 2017  
Founder/Co-Chair, The HPC Pipeline Workshop: Diversifying the HPC Workforce, 2017
- 2016 Program Chair, ACM Richard Tapia Celebration of Diversity in Computing, 2016
- 2015 Vice Chair, Technical Posters, SC, 2015  
Chair, Panels & Workshop, ACM Richard Tapia Celebration of Diversity in Computing, 2015
- 2014 Faculty Council, The Extreme Science and Engineering Discovery Environment, 2012-2014  
Co/Deputy Chair, Birds-of-a-Feather (BoFs), 2013-2014
- 2010 Sessions Chair, Broader Engagement Program, 2010
- 2009 Finance Chair, Parallel Architectures and Compilation Techniques, 2009

### Other Conference Organization and Program Committees

- ASPLOS-SRC Student Research Competition, ACM International Conference on Architectural Support for Programming Languages and Operating Systems, 2018
- Cluster IEEE Cluster, 2015
- CCGrid IEEE/ACM Intl. Symposium on Cluster, Cloud and Grid Computing, 2014, 2015
- EduPar NSF/TCPP Workshop on Parallel and Distributed Computing Education, 2020
- ESPAS First Intl. Workshop on Extreme Scale Parallel Architectures and Systems, 2012
- ESPT Workshop on Extreme-Scale Programming Tools, 2018
- FTS International Workshop on Fault Tolerant Systems, 2018
- HiPC IEEE Intl. Conference on High Performance Computing, 2011, 2012
- HIPS Workshop on High-level Parallel Programming Models and Supportive Environments, 2013
- HPCC IEEE Intl. Conf. on High Performance Computing and Communications, 2009, 2011, 2012
- ICA3PP Intl. Conference on Algorithms and Architectures for Parallel Processing, 2012
- ICDCS IEEE International Conference on Distributed Computing Systems, 2017
- ICPP Intl. Conference on Parallel Processing, 2012
- ICS Intl. Conference on Supercomputing, 2011
- IPDPS IEEE Intl. Parallel & Distributed Processing Symposium, 2014, 2018
- ISC PhD Forum Committee, ISC High Performance, 2020
- ISPA IEEE Intl. Symposium on Parallel and Distributed Processing with Applications, 2013
- ISPASS IEEE International Symposium on Performance Analysis of Systems and Software, 2017
- iWAPT Intl. Workshop on Automatic Performance Tuning, 2009
- PACT Intl. Conference on Parallel Architectures and Compilation Techniques, 2012, 2015
- RADR Workshop on Resource Arbitration for Dynamic Runtimes, 2020
- Resilience Workshop on Resiliency in HPC in Clusters, Clouds, and Grids, 2015, 2016, 2017
- SBAC-PAD Symposium on Computer Architecture and High Performance Computing, 2009, 2011
- SC Intl. Conf. on High Performance Computing, Networking, Storage and Analysis, 2011-2017, 2019
- Tapia ACM Richard Tapia Celebration of Diversity in Computing, 2015, 2016
- WHIST Intl. Workshop on High-performance Infrastructure for Scalable Tools, 2011, 2012
- WoC International Workshop on Container Technologies and Container Clouds, 2015

## Other Peer Reviewing Activities

- DSN The Intl. Conference on Dependable Systems and Networks, 2004, 2006
- IEEE-TC IEEE Transactions on Computers, 2013
- IEEE-TNSM IEEE Transactions on Network and Service Management, 2009
- Euro-Par Intl. European Conference on Parallel and Distributed Computing, 2002
- EuroPVM/MPI European PVM/MPI Users' Group Meeting, 2002, 2005
- JPDC Journal of Parallel and Distributed Computing, 2011
- PACT Parallel Architectures and Compilation Techniques, 2009
- ParCo Journal of Parallel Computing, 2011
- PDP Eleventh Euromicro Conference Parallel, Distributed and Network-Based Processing, 2003
- SC Intl. Conference on High Performance Computing, Networking, Storage and Analysis, 2007

## Grant Proposal Review Panels

- DOE-SBIR U.S. Dept. of Energy Office of Science Adv. Scientific Computing Research (SBIR), 2015
- DOE-WF U.S. Dept. of Energy Office of Science Adv. Scientific Computing Research (Workflows), 2014
- NSF-CCF National Science Foundation Comp. and Comm. Foundations (CCF), 2010, 2012, 2017
- NSF-CSR National Science Foundation Computing Systems Research (CSR), 2012
- NSF-CRI National Science Foundation CISE Research Infrastructure (CRI), 2010, 2013
- NSF-SDCI National Science Foundation Software Development for Cyberinfrastructure (SDCI), 2010
- NSF-SI2 National Science Foundation Software Infrastructure for Sustained Innovation (SI2), 2013

## University Committees and Service

- Emory Faculty Senate Executive Council, College of Arts and Science, 2025-  
Faculty Senate, College of Arts and Science, 2025-  
Director of Graduate Studies, Computer Science & Informatics Graduate Program, 2018-  
Technology Infrastructure and Policy Committee, 2018-  
Executive Council, Laney Graduate School, 2023-2026  
College of Arts and Science Dean Search Committee, 2025-2026  
co-Chair, Computer Science Department Chair Search Committee, 2025-2026  
Faculty Senate Admissions and Scholarships, College of Arts and Science, 2021-2025  
McMullan Award Selection Committee, College of Arts and Science, 2021  
Faculty Senate Executive Council, College of Arts and Science, 2019-2021  
Faculty Senate, College of Arts and Science, 2019-2021  
Faculty Senate Anti-Racism Working Group, College of Arts and Science, 2020  
Laney Graduate School STEM Symposium Committee, 2018
- UNM School of Engineering Dean Search Committee, 2016  
Center for Advanced Research Computing HPC Systems Engineer 3 Search, 2013

## Department Committees and Service

- Emory co-Chair, Computer Science Department Faculty Search Committee, 2025-2026  
Graduate Admissions Committee, Computer Science and Informatics, 2017-2026  
Graduate Recruiting, Computer Science and Informatics, 2017-2026  
Tenure-Track Faculty Search Committee, Computer Science Department, 2019-2021  
Lecture-Track Faculty Search Committee, Computer Science Department, 2017-2018, 2020-2021  
Chair, Computer Science Seminar Series, Computer Science Department, 2017-2020
- UNM Chair, Committee for the Promotion of Research, Computer Science Department, 2015, 2016

Chair, Department Web Presence, Computer Science Department, 2016  
Committee for the Promotion of Research, Computer Science Department, 2013, 2014  
Chair/co-Chair, Computer Science Colloquium Series, Computer Science Department, 2011-2014  
Lecturer II Search, Computer Science Department, 2012  
Co-organizer, Graduate Student Visit Day, Computer Science Department, 2009-2012

### Dissertation Committees

- 2016 Scott Levy, University of New Mexico  
Oscar Modragon, University of New Mexico
- 2015 George Saad, University of New Mexico
- 2013 Zheng Cui, University of New Mexico
- 2012 George Bezerra, University of New Mexico  
Bilal Shebaro, University of New Mexico
- 2011 Mohammed Al-Saleh, University of New Mexico  
Kurt Ferreira, University of New Mexico  
Donour Sizemore, University of New Mexico
- 2009 Manjunati Gorentla Venkata, University of New Mexico

### Dissertation Proposal Committees

- 2016 Matthew Dosanjh, University of New Mexico
- 2014 Oscar Modragon, University of New Mexico
- 2013 George Saad, University of New Mexico
- 2011 Bilal Shebaro, University of New Mexico  
Zheng Cui, University of New Mexico
- 2010 Kurt Ferreira, University of New Mexico

### Faculty Mentoring

- 2026 Martha Barker, Emory University
- 2025 Kristin Williams, Emory University
- 2020 Ymir Vigfusson, Emory University
- 2019 Nosayba El-Sayed, Emory University
- 2019 Avani Wildani, Emory University

### Community Membership, Leadership, and Service

- 2021 Steering Committee, BPCNet: Broadening Participation in Computing Network  
Presenter, "Preparing Your Thesis and Becoming a Ph.D. Candidate", CRA-WP Grad Cohort Workshop for Inclusion, Diversity, Equity, Accessibility, and Leadership Skills (IDEALS)  
Presenter, "Finding a Research Topic and Interdisciplinary Research", CRA-WP Grad Cohort Workshop for Inclusion, Diversity, Equity, Accessibility, and Leadership Skills (IDEALS)  
Mentor, CRA-WP Grad Cohort Workshop for Inclusion, Diversity, Equity, Accessibility, and Leadership Skills (IDEALS)  
Group Mentor, CS Grad4US Mentoring Program
- 2020 Presenter, "Effective Teaching and Class Management", CRA-WP Early & Mid-Career Mentoring Workshop  
Presenter, "Promotion to the Next Level", CRA-WP Early & Mid-Career Mentoring Workshop  
Mentor, CRA-WP Early & Mid-Career Mentoring Workshop  
Advisory Board, Wisconsin Emerging Scholars-Computer Science (WES-CS)

Presenter, "Preparing Your Thesis Proposal and Becoming a PhD Candidate", CRA-WP Grad Cohort for Underrepresented Minorities and Persons with Disabilities

Presenter, "Finding a Research Topic & Interdisciplinary Research", CRA-WP Grad Cohort for Underrepresented Minorities and Persons with Disabilities

Mentor, CRA-WP Grad Cohort for Underrepresented Minorities and Persons with Disabilities

### Other Service Activities

Project Evaluator/Judge, New Mexico Supercomputing Challenge, 2009-2011, 2014, 2015

Broader Engagement Committee, Intl. Conference on High Performance Computing, Networking, Storage and Analysis (SC), 2008, 2010-2013