

Dorian C. Arnold

Curriculum Vitæ

Emory University
Department of Math and Computer Sciences
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Research Interests

High-performance computing • Operating and Runtime Systems • Program Analysis Tools and Tool Infrastructure • Resilience/Fault-tolerance, exploring autonomic system software for the effective, robust utilization of high-end computing platforms.

Professional Preparation

- 2008 **PhD (computer science)**, *University of Wisconsin*, Madison, WI.
Dissertation: "Reliable, Scalable Tree-based Overlay Networks." Advisor: Dr. Barton Miller.
- 1998 **MS (computer science)**, *University of Tennessee*, Knoxville, TN.
Project: "CLUBS: Checkpoint Library for Unix-based Systems." Advisor: Dr. James Plank.
- 1996 **BS summa cum laude (math, computer science)**, *Regis University*, Denver, CO.
- 1994 **AS (math, physics, chemistry)**, *St. John's Junior College*, Belize City, Belize.

Appointments

- 2017 – **Associate Professor**, *Department of Mathematics and Computer Science*, Emory University.
- 2015 – 2017 **Associate Professor**, *Department of Computer Science*, University of New Mexico.
- 2009 – 2015 **Assistant Professor**, *Department of Computer Science*, University of New Mexico.
- 2013 **Summer Faculty**, *Department of Scalable System Software*, Sandia National Laboratories.
- 2011 – 2013 **Affiliate Research Scientist**, *Ultrascale Systems Research Center*, New Mexico Consortium.
- 2009 – 2010 **Visiting Scientist**, *Ctr. for Applied Scientific Computing*, Lawrence Livermore National Lab.
- 2006 **Technical Scholar**, *Ctr. for Applied Scientific Computing*, Lawrence Livermore National Lab.
- 1999 – 2001 **Research Associate**, *Innovative Computing Laboratory*, University of Tennessee.

Select Awards and Honors

- 2017–2020 Distinguished Speaker, Association for Computing Machinery (ACM)
- 2017 General Chair, ACM Richard Tapia Celebration of Diversity in Computing
- 2017 Voting Member, Steering Committee, International Conference for High Performance Computing, Networking, Storage and Analysis (SC)
- 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.

Publications

Publication Statistics

(Gathered May 2017 from Google Scholar).

- 1547 Citations from 2000 – 2017, 60 references including 19 refereed conference papers, 10 refereed journal papers, 26 refereed workshop papers and 2 book chapters.
- 543 Citations per Top 3 most cited articles.
- 223 Citations per #1 most cited article.
- 19 H-index, 19 articles cited at least 19 times.
- 11 i40-index, 11 articles cited at least 40 times.
- 29 i10-index, 29 articles cited at least 10 times.

Student advisees are highlighted in [green](#); students highlighted in [yellow](#) were co-advised (at least for the research upon which the article is based.)

Refereed Conference Papers

- C1 [Samuel K. 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 2017.
- C2 [Taylor L. Groves](#), Ryan E. 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.
- C3 [Taylor L. Groves](#), Ryan E. 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.
- C4 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 2014a. Acceptance rate: 82/394, 21%.
- C5 [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%.
- C6 [Joshua D. Goehner](#), [Taylor L. 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.
- C7 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%.
- C8 [Dewan Ibtesham](#), [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%.

- C9 Kurt Ferreira, Jon Stearley, James H Laros III, Ron Oldfield, Kevin Pedretti, Ron Brightwell, Rolf Riesen, Patrick G 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%.
- C10 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%.
- C11 **Dorian Arnold** and Barton P 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%.
- C12 **Roy W. 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)*, 2010.
- C13 Gregory L Lee, Dong H Ahn, **Dorian Arnold**, Bronis R De Supinski, Matthew Legendre, Barton P 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%.
- C14 Dong H Ahn, **Dorian Arnold**, B Supinski, Gregory L Lee, Barton P 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%.
- C15 Aroon Nataraj, Allen Malony, Allen Morris, **Dorian Arnold**, and Barton P 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%.
- C16 **Dorian Arnold**, Dong H Ahn, de Supinski Bronis R, Gregory Lee, Barton P. 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%.
- C17 Gregory L Lee, Dong H Ahn, **Dorian Arnold**, Bronis R De Supinski, Barton P Miller, and Martin Schulz. Benchmarking the Stack Trace Analysis Tool for BlueGene/L. In *Parallel Computing 2007*, pages 621–628, September 2007.
- C18 Phillip C Roth, **Dorian Arnold**, and Barton P 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%.
- C19 **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%.
- C20 **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.

Refereed Journal Papers

- J1 **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.

- J2 [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.
- J3 Kurt B 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*, January 2014b.
- J4 Patrick G Bridges, [Dorian Arnold](#), Kevin T Pedretti, Madhav Suresh, Feng Lu, Peter A 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.
- J5 [Joshua D Goehner](#), [Dorian Arnold](#), Dong H Ahn, Gregory L Lee, Bronis R de Supinski, Matthew P LeGendre, Bronis P Miller, and Martin Schulz. LIBI : A Framework for Bootstrapping Extreme Scale Software Systems. *Parallel Computing*, October 2012.
- J6 Aroon Nataraj, Allen D Malony, Alan Morris, [Dorian Arnold](#), and Barton P 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.
- J7 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.
- J8 [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.
- J9 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.
- J10 [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.

Refereed Workshop Papers

- W1 Alireza Goudarzi, [Dorian Arnold](#), Darko Stefanovic, Kurt B. 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.
- W2 [Dorian Arnold](#). Fiesta: A framework for introspective extreme scale tools and applications. In *Advanced Scientific Computing Research Machine Learning Workshop*, January 2015. Position abstract.
- W3 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.
- W4 [Dewan Ibtesham](#), [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.
- W5 [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.
- W6 [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.

- W7 Patrick Widener, Kurt Brian Ferreira, Scott N Levy, Ronald B Brightwell, Patrick G 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.
- W8 Kurt B Ferreira, Rolf Riesen, **Dorian Arnold**, Dewan Ibtesham, and Ron Brightwell. The Viability of Using Compression to Decrease Message Log Sizes. In Euro-Par 2012: Parallel Processing Workshops, 2013a.
- W9 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.
- W10 Yihua He Taylor L. Groves 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.
- W11 Barton P. Miller, **Dorian Arnold** Michael J. Brim, Philip C. 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.
- W12 Jon Stearley, Kurt B Ferreira, David J Robinson, Jim Laros, Kevin T Pedretti, **Dorian Arnold**, Patrick G Bridges, and Rolf Riesen. Does Partial Replication Pay Off? In IEEE/IFIP 42nd International Conference on Dependable Systems and Networks Workshops (DSN-W), 2012.
- W13 Kurt B Ferreira, Rolf Riesen, **Dorian Arnold**, Dewan Ibtesham, 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.
- W14 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.
- W15 **Dorian Arnold**, Patrick G Bridges, Kurt B Ferreira, David K 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.
- W16 Patrick G 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.
- W17 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.
- W18 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)*, 2010. Refereed abstract and poster presentation.
- W19 **Dorian Arnold**, Gary D Pack, and Barton P. Miller. Tree-based Computing for Scalable Applications. In 11th International Workshop on High-Level Parallel Programming Models and Supportive Environments, 2006.
- W20 Philip C Roth, **Dorian Arnold**, and Barton P Miller. Benchmarking the MRNet Distributed Tool Infrastructure: Lessons Learned. In 18th International Parallel and Distributed Processing Symposium, 2004.
- W21 **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.
- W22 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.

- W23 David Cronk, Graham E Fagg, Brett D 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.
- W24 **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.
- W25 **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.
- W26 **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 F Wheeler, Wonsuck Lee, Clint N 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 R Rice. *Problem-solving Environments*, chapter 14, pages 409–442. Morgan Kaufmann Publishers Inc., 2003.

Other Technical Reports

- T1 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.
- T2 **Dorian Arnold**. *Reliable, Scalable Tree-based Overlay Networks*. PhD thesis, University of Wisconsin–Madison, December 2008.
- T3 **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.

Patents Filed

- T4 Roy William Keyes, Christian Romano, Shuang Luan, and **Dorian Arnold**. System and Methods for Performing Medical Physics Calculation, February 2013. US Patent 20,130,054,670, filed and published.

External Funding

Funding Statistics

- \$12.4M **Total project budget, amongst collaborating institutions.**
- \$3.1M **Total UNM budget.**
- \$2.5M **Total UNM budget committed to **Dorian Arnold**.**
- \$1.9M **Total UNM budget with **Dorian Arnold** as principal investigator.**

Active Funding

- \$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
- \$1.07M **National Science Foundation, SHF: Medium: Collaborative Research: Toward Extreme Scale Fault-Tolerance: Exploration Methods, Comparative Studies and Decision Processes**, August 2016 – August 2020, **Dorian Arnold**, Lead Principal Investigator.
UNM budget: \$540K; Arnold budget: \$540K

- \$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;

Previously-ended Funding

- \$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
- \$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;
- \$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
- \$75K **Sandia National Laboratory, Extreme Scale Checkpointing**, March, 2012 – September, 2012, **Dorian Arnold**, Principal Investigator.
UNM budget: \$75K; Arnold budget: \$75K;
- \$66K **Lawrence Livermore National Laboratory, Improving Tool Startup**, March, 2013 – April, 2014, **Dorian Arnold**, Principal Investigator.
UNM budget: \$66K; Arnold budget: \$66K;
- \$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;
- \$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;
- \$62K **Sandia National Laboratories, Extreme Scale Application Resilience**, January, 2013 – March, 2014, **Dorian Arnold**, Principal Investigator.
UNM budget: \$62K; Arnold budget: \$62K;
- \$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;
- \$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.

Teaching

- CS 587 **Advanced Operating Systems**, Taught six semesters.
- CS 481 **Operating Systems Principles**, Taught six semesters.
- CS 341 **Introduction to Computer Organization**, Taught two semesters.

- CS 591 **Autonomic Computing.**
- CS 591 **Extreme Scale Computing.**

Research Advisement

Research Staff

Since 2014 Evan Dye, Research Engineer II.

Current Graduate Research Advisees

- Since 2010 Taylor Groves, Ph.D. Candidate (All requirements complete; graduating May '17).
- Since 2010 Dewan Ibtesham, Ph.D. Candidate (All but dissertation [ABD]).
- Since 2012 Samuel Gutierrez, Ph.D. Candidate (All but dissertation [ABD]).
- Since 2013 David DeBonis, 4th year Ph.D. student.
- Since 2013 Whit Schonbein. 3rd year Ph.D. student.
- Since 2016 Nathan Hjelm. 5th year Ph.D. student. (Co-advised with Prof. Jared Saia)
- Since 2016 Hans Weeks, M.S. student.
- Since 2016 Theodore (Alex) Evans, B.S. student.

Past Graduated Research Advisees

- 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. 2010 Christian Romano, co-advised undergraduate research w/ Prof. Shuang Luan.

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 B.S. project w/ Prof. Patrick Bridges
- 2011 – 2012 George Bezerra, co-advised HPC-oriented research w/ Prof. Stephanie Forrest

Professional Service and Activities

- SC ⇒ International Conference on High Performance Computing, Networking, Storage and Analysis
- Tapia Conference ⇒ ACM Richard Tapia Celebration of Diversity in Computing

Distinguished/Leadership Activities

- Senior member, Institute of Electrical and Electronics Engineers (IEEE)
- 2015– Associate Editor, IEEE Transactions on Parallel and Distributed Systems (TPDS)
- 2018 Chair, SC Student Programs
- 2017 General Chair, Tapia Conference
- Voting member, SC Steering Committee
- Chair, SC Early Career Program
- Deputy Chair, SC Student Programs
- Co-Vice Chair, Systems Track, International Conference on Parallel Processing (ICPP)
- Founder/Co-Chair, The HPC Pipeline Workshop: Diversifying the HPC Workforce

- 2016 Program Chair, Tapia Conference
Vice Chair, SC Student Programs
- 2015 Vice Chair, Posters, SC Technical Program
Deputy Chair, SC Student Programs
Chair, Student Activities, SC Student Programs
Chair, Panels & Workshop, Technical Program, Tapia Conference
- 2014 Co-chair, Birds-of-a-Feather (BoFs), SC Technical Program
Member, XSEDE Faculty Council
- 2013 Deputy Chair, Birds-of-a-Feather (BoFs), SC Technical Program
Member, XSEDE Faculty Council
- 2012 Member, XSEDE Faculty Council
- 2010 Sessions Chair, SC Broader Engagement Program
- 2009 Finance Chair, Parallel Architectures and Compilation Techniques (PACT)

Conference Technical Program Committees

- 2017 Intl. Conference on High Performance Computing, Networking, Storage and Analysis (SC)
IEEE International Symposium on Performance Analysis of Systems and Software (ISPASS)
IEEE International Conference on Distributed Computing Systems (ICDCS)
10th Workshop on Resiliency in High Performance Computing (Resilience) in Clusters, Clouds, and Grids
- 2016 Intl. Conference on High Performance Computing, Networking, Storage and Analysis (SC)
Workshop on Resiliency in High Performance Computing in Clusters, Clouds, and Grids
ACM Richard Tapia Celebration of Diversity in Computing
- 2015 Intl. Conference on High Performance Computing, Networking, Storage and Analysis (SC)
International Conference on Parallel Architectures and Compilation Techniques (PACT)
IEEE/ACM Intl. Symposium on Cluster, Cloud and Grid Computing (CCGrid)
IEEE Cluster 2015
Workshop on Resiliency in High Performance Computing in Clusters, Clouds, and Grids
WoC: First International Workshop on Container Technologies and Container Clouds
ACM Richard Tapia Celebration of Diversity in Computing
- 2014 Intl. Conference on High Performance Computing, Networking, Storage and Analysis (SC)
IEEE Intl. Parallel & Distributed Processing Symposium (IPDPS)
IEEE/ACM Intl. Symposium on Cluster, Cloud and Grid Computing (CCGrid)
- 2013 Intl. Conference on High Performance Computing, Networking, Storage and Analysis (SC)
IEEE Intl. Symposium on Parallel and Distributed Processing with Applications (ISPA)
Workshop on High-level Parallel Programming Models and Supportive Environments (HIPS)
- 2012 Intl. Conference on High Performance Computing, Networking, Storage and Analysis (SC)
Intl. Conference on Parallel Architectures and Compilation Techniques (PACT)
Intl. Conference on Parallel Processing (ICPP)
IEEE Intl. Conference on High Performance Computing and Communications (HPCC)
IEEE Intl. Conference on High Performance Computing (HiPC)
Intl. Conference on Algorithms and Architectures for Parallel Processing (ICA3PP)
Second Intl. Workshop on High-performance Infrastructure for Scalable Tools (WHIST)
First Intl. Workshop on Extreme Scale Parallel Architectures and Systems (ESPAS)
- 2011 Intl. Conference on High Performance Computing, Networking, Storage and Analysis (SC)
Intl. Conference on Supercomputing (ICS)
IEEE Intl. Conference on High Performance Computing (HiPC)

- IEEE Intl. Conference on High Performance Computing and Communications (HPCC)
- Symposium on Computer Architecture and High Performance Computing (SBAC-PAD)
- First Intl. Workshop on High-performance Infrastructure for Scalable Tools (WHIST)
- 2010 Intl. Conference on High Performance Computing, Networking, Storage and Analysis (SC)
- 2009 IEEE Intl. Conference on High Performance Computing and Communications (HPCC)
- Symposium on Computer Architecture and High Performance Computing (SBAC-PAD)
- Intl. Workshop on Automatic Performance Tuning (iWAPT)

Other Peer Reviewing Activities

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

Grant Proposal Review Panels

- 2015 U.S. Department of Energy Office of Science Advanced Scientific Computing Research (SBIR)
- 2014 U.S. Department of Energy Office of Science Advanced Scientific Computing Research (Workflows)
- 2013 National Science Foundation CISE Research Infrastructure (CRI)
- National Science Foundation Software Infrastructure for Sustained Innovation (SI2) Program
- 2012 National Science Foundation Computing Systems Research (CSR)
- National Science Foundation Computing and Communication Foundations (CCF)
- 2010 National Science Foundation Computer Research Infrastructure (CRI)
- National Science Foundation Software Development for Cyberinfrastructure (SDCI)
- National Science Foundation Computing and Communication Foundations (CCF)

UNM Service Activities

- 2016 Committee Member, School of Engineering Dean Search
- Chair, Department Committee for the Promotion of Research
- Chair, Department Web Presence
- 2015 Chair, Department Committee for the Promotion of Research
- 2014 Chair, Department Colloquium Series
- Member, Department Committee for the Promotion of Research
- Member, Department Graduate Committee
- 2013 Member, UNM CARC HPC Systems Engineer 3 Search Committee
- Chair, Department Colloquium Series
- Member, Department Committee for the Promotion of Research
- 2012 Chair, Department Colloquium Series
- Co-organizer, Department Graduate Student Visit Day
- Committee Member, UNM CS Lecturer II Search
- 2011 Co-chair, Department Colloquium Series

Co-organizer, Department Graduate Student Visit Day

2009 Co-organizer, UNM Computer Science Graduate Student Visit Day

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

Other Service Activities

2015 Project Evaluator/Judge, New Mexico Supercomputing Challenge

2014 Project Evaluator/Judge, New Mexico Supercomputing Challenge

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

2012 Member, Broader Engagement Committee, Intl. Conference on High Performance Computing, Networking, Storage and Analysis (SC)

2011 New Mexico Supercomputing Challenge Judge

Member, Broader Engagement Committee, Intl. Conference on High Performance Computing, Networking, Storage and Analysis (SC)

2010 Project Evaluator, New Mexico Supercomputing Challenge

Member, Broader Engagement Committee, Intl. Conference on High Performance Computing, Networking, Storage and Analysis (SC)

2009 Judge, New Mexico Supercomputing Challenge

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