Vita: James S. Plank

(Current as of November, 2020)

Contact Information

Department of Electrical Engineering and Computer Science
University of Tennessee
401 Min H. Kao Building
1520 Middle Drive
Knoxville, TN 37996-2250

Phone: (865) 974-4397
Fax: (865) 974-5483
Email: jplank@utk.edu
Web: http://web.eecs.utk.edu/~plank

Research Interests

Neuromorphic computing systems and applications, storage systems, RAID, distributed systems, erasure codes, fault-tolerance, operating systems.

Education

Ph.D. Princeton University, Computer Science, Jan. 1993
Dissertation title: *Efficient Checkpointing on MIMD Architectures*
Thesis advisor: Kai Li
Funding: AT&T Fellowship: 1990-1992

M.A. Princeton University, Computer Science, May 1990

B.S. Yale University, Computer Science, May 1988
Grade point average: 3.87
Honors: Summa Cum Laude, Phi Beta Kappa, Tau Beta Pi

Employment:

2006 - present: Professor, Department of Computer Science/EECS, University of Tennessee.

1999 - 2006: Associate professor, Department of Computer Science, University of Tennessee.

1993-1999: Assistant professor, Department of Computer Science, University of Tennessee.

1988 - 1993: Graduate student, Department of Computer Science, Princeton University.

Summer, 1991: Research assistant, Department of Computer Science, University of Tennessee. Worked for Jack Dongarra. Co-designed and wrote the execution

tool for *HeNCE*, a programming environment for heterogeneous parallel computing.

Summer, 1990: Summer intern, Xerox Palo Alto Research Center: Worked for Alan Demers. Ported the research language Modula-3 to Xerox's *Portable Cedar* parallel runtime system.

Professional Society Membership

Senior Member, IEEE

Expert Witness Experience

- Keker & Van Nest LLP, San Francisco, CA: 2014-2016.
  Patent Infringement on Storage Systems.
  Discovery; Invalidity and Non-infringement analysis; Claim construction; Source code evaluation; Expert reports; Deposition; Trial.

- Fenwick & West LLP, Mountain View, CA: 2013-2014.
  Patent Infringement on Storage Systems.
  Source code evaluation; Draft expert reports

- Dykema Gossett PLLC, Chicago: 2011-2012.
  Patent Infringement on Storage Systems.
  Prior art review; Source code evaluation; Draft expert reports

Citation Information (from Google Scholar)

Total Citations: 10,286
H-Index: 49
Most cited papers:

"Libckpt: Transparent Checkpointing Under Unix":	912
"A Tutorial on Reed-Solomon Coding...":	867
"Analyzing Market-Based Resource Allocation Strategies..."	512
"Diskless Checkpointing"	443

External Funding

"Neuromorphic and Dynamic Learning Computing", UT-Battelle, $42,999, January, 2020 – August, 2020. Single PI.

"Design Approaches for Efficient Reconfigurable Neuromorphic Systems," $1,546,584, Air Force Research Laboratory, January, 2019 – December, 2021. Co-PI with Garrett Rose (Lead) and Mark Dean.

"CIF: Small: Collaborative Research: A software toolbox for computing and exploring the fundamental limits of information systems," National Science Foundation, CCR-1816518, $180,005.00, October, 2018 - September, 2021. Collaborative research with Chao Tian (Texas A&M).

"Using the TENNLab Software Stack to Explore and Demonstrate Capabilities of Loihi,"

Intel Corporation, $30,398, July, 2018 – July, 2019. Single PI.

"*Design of a Memristive Dynamic Adaptive Neural Network Array (mrDanna)*," $1,217,919, Air Force Research Laboratory, December, 2015. Co-PI with Garrett Rose and Mark Dean.

"*REU (Research Experiences for Undergraduates) Supplement,"* $16,000, National Science Foundation, to award CSR-1016636, Summer, 2012.

"*REU (Research Experiences for Undergraduates) Supplement,"* $16,000, National Science Foundation, to award CSR-1016636, Summer, 2011.

"*CSR-Small: Developing and Implementing High Performance Erasure Codes to Tolerate Storage Failures,"* $410,036 , National Science Foundation CSR-1016636, Single PI, September 1, 2010 - August 31, 2013.

"*REU (Research Experiences for Undergraduates) Supplement,"* $15,000, National Science Foundation, to award CNS-0615221, Summer, 2010.

Erasure-Coded Caching in Cloud Computing and Storage Environments, $24,000, Google, Inc., August 1, 2009 - July 31, 2010. Single PI.

"*REU (Research Experiences for Undergraduates) Supplement,"* $9,375, National Science Foundation, to award CNS-0615221, Summer, 2007.

"*CSR-PDOS: Exploring and Developing Improved Erasure Codes for Storage Systems,"* $395,892 , National Science Foundation CNS-0615221, Single PI, August 1, 2006 - July 31, 2010.

"*Senior Faculty Teaching Award, College of Arts and Sciences,"* $1,000, The field for this award was composed of all faculty in Arts and Sciences with 10 or more years of experience. 2003-2004.

"*Active Logistical State Management for Distributed and Grid Application Environments,"* $587,083, National Science Foundation, CNS-0437508, September 1, 2004 - August 31, 2007. Co-PI with Jian Huang, Micah Beck and Jack Dongarra.

"*CISE Research Resources: A National Logistical Networking Testbed*," $1,852,936, National Science Foundation, EIA-0224441, November, 2002 - October, 2005. Co-PI with Micah Beck, Rich Wolski, Miron Livny and Jack Dongarra.

"*NGS: Optimizing Performance and Reliability in Distributed Computing Systems Through Wide Spectrum Storage Services*," $814,625, National Science Foundation, ACI-0204007, November 2002 - September 2005. Co-PI with Micah Beck, Jack Dongarra, Henri Casanova and Richard Wolski.

"*GridSolve: A System for Grid-enabling General Purpose Problem Solving Environments*," $1,510,585, National Science Foundation, ANI-0222945, July, 2002 - June, 2004. Co-PI with Jack Dongarra, Micah Beck and Henri Casanova.

"*Optimizing Performance and Enhancing Functionality of Distributed Applications Using*

Logistical Networking," $1,499.699, Department of Energy, DE-FC02-01ER25465, August, 2001 - August, 2004. Co-PI with Micah Beck, Jack Dongarra and Rich Wolski.

"*A Research Testbed for Services Based on Logistical Networking*," $998,799, National Science Foundation, ANI-9980203, August, 2000 - July, 2002. Co-PI with Micah Beck, Bert Dempsey and Rich Wolski.

"*Research Infrastructure: The Scalable Intracampus Research Grid for Computer Science Research*," $1,968,088, National Science Foundation, EIA-9972889, February, 2000 - January, 2005. Co-PI with Jack Dongarra, Micah Beck, Bob Ward, Rich Wolski, others.

"*Next Generation Software: Logistical QoS through Application-Driven Scheduling of Remote Storage*," $1,300,000, National Science Foundation, EIA-9975015, August, 1999 - July, 2002. Co-PI with Micah Beck, Jack Dongarra, Rich Wolski, Francine Berman and Henri Casanova.

"*Optimizing Distributed Application Performance Using Logistical Networking*," $899,963, U. S. Department of Energy, DE-FC0299ER25396, October, 1999 - September, 2002. Co-PI with Micah Beck, Jack Dongarra, and Rich Wolski.

"*NetSolve: Enabling Environment for Fault Tolerant, High Performance Network Computing*," $398,101, National Science Foundation, ACI-9876895, May 1999 - April 2002. Co-PI with Jack Dongarra.

"*CISE Research Instrumentation: Enabling Technology for High-Performance Heterogeneous Clusters Focusing on Grid Middleware, Fault Tolerance & Sparse Matrix Computations*," $150,000, National Science Foundation, EIA-9818334 (equipment), March 1999 - February 2002. Co-PI with Jack Dongarra and Padma Raghavan.

"*CAREER: Algorithms and Tools for Fault Tolerance and Migration in Distributed Computing Environments*," $205,000, National Science Foundation, CCR-9703390, August, 1997 - August, 2001.

Science Alliance Research Award, $5,000, University of Tennessee and ORNL Science Alliance, May, 1997.

"*Shared University Research Grant*," $1,300,000, IBM (equipment), 1996. Co-PI with Bob Ward, Jack Dongarra, Peter Cummings, Kwai Wong, JICS.

Science Alliance Research Award, $5,000, University of Tennessee and ORNL Science Alliance, May, 1996.

"*High-Performance ATM Network for Computational Science*," $100,000 (equipment), National Science Foundation, CDA-95-29459, February 1996 - January 1997. Co-PI with Michael Berry, Padma Raghavan, Jens Gregor and Mark Jones.

Science Alliance Research Award, $5,000, University of Tennessee and ORNL Science Alliance, May, 1995.

"*Efficient Checkpointing for Scientific Computing*," $10,000, Oak Ridge Associated

Universities, Junior Faculty Enhancement Award, April, 1995.

"*Fast Checkpointing in Parallel Environments*," $85,928, National Science Foundation, CCR-9409496, August, 1994 - August 1997.

Publications: Journals

Wilkie Olin-Ammentorp, Karsten Beckmann, Catherine D. Schuman, James S. Plank, Nathaniel C. Cady, "Stochasticity and Robustness in Spiking Neural Networks," *Neurocomputing*, Elsevier BV, ISSN 0925-2312, July, 2020.

Aaron R. Young, Mark E. Dean, James S. Plank, and Garrett S. Rose, "A Review of Spiking Neuromorphic Communication Systems," *IEEE Access*, DOI: 10.1109/ ACCESS.2019.2941772, September, 2019.

James S. Plank, Catherine D. Schuman, Grant Bruer, Mark E. Dean and Garrett S. Rose, "The TENNLab Exploratory Neuromorphic Computing Framework," *IEEE Letters of the Computer Society*, Volume 1, July-Dec, 2018, pp. 17-20.

Adam Disney and James S. Plank, "Using Topcoder in Introductory Data Structures and Algorithms," *The Journal of Computing Sciences in Colleges*, Volume 33, #2, December, 2017, pp. 268-274.

Adam Disney, John Reynolds, Catherine D. Schuman, Aleksander Klibisz, Aaron Young and James S. Plank, "DANNA: A Neuromorphic Software Ecosystem," *Biologically Inspired Computing Systems*, Volume 9, June, 2016, Elsevier.

Mario Blaum, James S. Plank, Moshe Schwartz and Eitan Yaakobi, "Construction of Partial MDS and Sector-Disk Codes with Two Global Parity Symbols," *IEEE Transactions on Information Theory*, 62(5), May, 2016, pp. 2673-2681.

James S. Plank, "A B-Tree Assignment that is Realistic Enough that Students Can List It On Their Resumes," *The Journal of Computing Sciences in Colleges*, Volume 31, #2, December, 2015, pp. 278-282.

James S. Plank and Mario Blaum, "Sector-Disk (SD) Erasure Codes for Mixed Failure Modes in RAID Systems," *ACM Transactions on Storage*, Volume 10, Issue 1, January, 2014.

James S. Plank, "Erasure Codes for Storage Systems: A Brief Primer," *;login: the Usenix Magazine,* 38(6), December, 2013, Usenix Association.

Jianqiang Luo, Mochan Shrestha, Lihao Xu and James S. Plank, "Efficient Encoding Schedules for XOR-Based Erasure Codes," *IEEE Transactions on Computers*, May, 2013.

James S. Plank, Adam L. Buchsbaum and Bradley T. Vander Zanden, "Minimum Density RAID-6 Codes," *ACM Transactions on Storage*, 6 (4), May, 2011. DOI 10.1145/1970338.1970340.

James S. Plank, "The Raid-6 Liber8tion Code," *International Journal of High Performance Computing Applications*, 23(3), 2009, pp. 242-251.

James S. Plank and Michael G. Thomason, "An Exploration of Non-Asymptotic Low-

Density Parity Check Erasure Codes for Wide-Area Storage Applications," *Parallel Processing Letters*, Volume 17, Number 1, March, 2007, pages 102-123.

James S. Plank and Ying Ding, "Note: Correction to the 1997 Tutorial on Reed-Solomon Coding," *Software, Practice & Experience*, 35(2), February, 2005, pp. 189-194.

A. Bassi, M. Beck, J. P. Gelas, L. Lefevre, T. Moore and J. S. Plank, "Active and logistical networking for grid computing: the e-Toile architecture," *Future Generation Computer Systems*, Volume 21, Number 1, January, 2005, pp. 199-208.

Elmootazbellah N. Elnozahy and James S. Plank, "Checkpointing for Peta-Scale Systems: A Look into the Future of Practical Rollback-Recovery," *IEEE Transactions on Dependable and Secure Computing*, 1(2), April-June, 2004. pp. 97-108.

James S. Plank, Scott Atchley, Ying Ding and Micah Beck, "Algorithms for High Performance, Wide-area Distributed File Downloads," *Parallel Processing Letters*, 13(2), June, 2003, pp. 207-224.

Alessandro Bassi, Micah Beck, Terry Moore, James S. Plank, Martin Swany, Rich Wolski and Graham Fagg, "The Internet Backplane Protocol: A Study in Resource Sharing," *Future Generation Computing Systems*, 19(4), May, 2003, pp. 551-561.

Scott Atchley, Stephen Soltesz, James S. Plank, and Micah Beck, "Video IBPster," *Future Generation Computer Systems*, 19, 2003, pp. 861-870.

James S. Plank, Alexander Bassi, Micah Beck, Terence Moore, D. Martin Swany and Rich Wolski, "Managing Data Storage in the Network," *IEEE Internet Computing*, 5(5), September/October, 2001, pp. 50-58.

Rich Wolski, James S. Plank, John Brevik and Todd Bryan, "Analyzing Market-based Resource Allocation Strategies for the Computational Grid," *International Journal Of High Performance Computing Applications*, 15(3), Fall, 2001, pp. 258-281. Sage Science Press.

James S. Plank and Michael G. Thomason, "Processor Allocation and Checkpoint Interval Selection in Cluster Computing Systems," *Journal of Parallel and Distributed Computing*, 61(11), November, 2001, pp. 1570-1590. Academic Press.

James S. Plank, Henri Casanova, Micah Beck and Jack Dongarra, "Deploying Fault Tolerance and Task Migration with NetSolve," *Future Generation Computer Systems*, 15, 1999, pp. 745-755. Elsevier.

Henri Casanova, MyungHo Kim, James S. Plank and Jack Dongarra, "Adaptive Scheduling for Task Farming with Grid Middleware," *International Journal of High Performance Computing*, 13(3), Fall, 1999. pp. 231-240. Sage Science Press.

Micah Beck, Henri Casanova, Jack Dongarra, Terry Moore, James S. Plank, Fran Berman and Rich Wolski, "Logistical quality of service in NetSolve," *Computer Communications*, Elsevier, 22(11), July, 1999. pp. 1034-1044.

James S. Plank, Yuqun Chen, Kai Li, Micah Beck and Gerry Kingsley, "Memory Exclusion:

Optimizing the Performance of Checkpointing Systems," *Software - Practice and Experience*, 29(2), 1999, pp. 125-142.

James S. Plank, Kai Li and Michael A. Puening, "Diskless Checkpointing," *IEEE Transactions on Parallel and Distributed Systems*, 9(10), October, 1998, pp. 972-986.

James S. Plank, "A Tutorial on Reed-Solomon Coding for Fault-Tolerance in RAID-like Systems," *Software - Practice and Experience*, 27(9), September, 1997, pp. 995-1012.

James S. Plank, Youngbae Kim and Jack Dongarra, "Fault Tolerant Matrix Operations for Networks of Workstations Using Diskless Checkpointing," *Journal of Parallel and Distributed Computing*, 43, 1997, pp. 125-138.

James S. Plank, Micah Beck and Gerry Kingsley, "Compiler-Assisted Memory Exclusion for Fast Checkpointing," *IEEE Technical Committee on Operating Systems and Application Environments*, 7(4), Winter 1995, pp. 10-14.

James S. Plank and Kai Li, "Ickp - A Consistent Checkpointer for Multicomputers," *IEEE Parallel and Distributed Technologies*, 2(2), Summer, 1994, pp. 62-67.

Kai Li, Jeffrey F. Naughton and James S. Plank, "Low-Latency, Concurrent Checkpointing for Parallel Programs," *IEEE Transactions on Parallel and Distributed Systems*, 5(8), August, 1994, pp. 874-879.

Kai Li, Jeffrey F. Naughton and James S. Plank, "An Efficient Checkpointing Method for Multicomputers with Wormhole Routing," *International Journal of Parallel Processing*, 20(3), June, 1992, pp. 150-180.

Kai Li, Jeffrey F. Naughton and James S. Plank, "Real-Time, Concurrent Checkpoint for Parallel Programs," *ACM SIGPLAN Notices*, 25(3), March, 1990, pp. 79-88.

Publications: Refereed Book Chapters

Yuqun Chen, James S. Plank and Kai Li, "CLIP: A Checkpointing Tool for Message Passing Parallel Programs," In Scalable Input/Output, Daniel A. Reed, editor, The MIT Press, Cambridge, MA, 2004, pp. 182-200.

Rich Wolski, John Brevik, James S. Plank and Todd Bryan, "Grid resource allocation and control using computational economies," In Grid Computing: Making The Global Infrastructure a Reality, F. Berman, G. Fox and A. Hey editors, John Wiley & Sons, 2003.

Micah Beck, Terry Moore, James S. Plank and Martin Swany, "Logistical Networking: Sharing More Than the Wires," In Active Middleware Services, Salim Hariri, Craig A. Lee, and Cauligi S. Raghavendra editors, Kluwer Academic, Norwell, MA, 2000.

James S. Plank, "Program Diagnostics," In Wiley Encyclopedia of Electrical and Electronics Engineering, John Wiley & Sons, John G. Webster, vol. 17, 1999, pp. 300-310.

Publications: Refereed Conferences

James S. Plank, Jiajia Zhao and Brent Hurst, "Reducing the Size of Spiking Convolutional Neural Networks by Trading Time for Space," *IEEE International Conference on Rebooting Computing"*, December, 2020.

Aaron R. Young, Adam Z. Foshie, Mark E. Dean, James S. Plank, Garrett S. Rose, J. Parker Mitchell and Catherine D. Schuman, "Scaled-up Neuromorphic Array Communications Controller (SNACC) for Large-scale Neural Networks," *IJCNN: The International Joint Conference on Neural Networks*, July, 2020.

Catherine D. Schuman, J. Parker Mitchell, Maryam Parsa, James S. Plank, Samuel D. Brown, Garrett S. Rose, Robert M. Patton and Thomas E. Potok, "Automated Design of Neuromorphic Networks for Scientific Applications at the Edge," *IJCNN: The International Joint Conference on Neural Networks*, July, 2020.

Catherine D. Schuman, J. Parker Mitchell, Robert M. Patton, Thomas E. Potok and James S. Plank, "Evolutionary Optimization for Neuromorphic Systems," *NICE: Neuro-Inspired Computing Elements Workshop*, 2020.

Catherine D. Schuman, James S. Plank, Grant Bruer and Jeremy Anantharaj, "Non-Traditional Input Encoding Schemes for Spiking Neuromorphic Systems," *IJCNN: The International Joint Conference on Neural Networks*, Budapest, 2019.

John J. M. Reynolds, James S. Plank and Catherine D. Schuman, "Intelligent Reservoir Generation for Liquid State Machines using Evolutionary Optimization," *IJCNN: The International Joint Conference on Neural Networks*, Budapest, 2019.

James S. Plank, Charles Rizzo, Kirolos Shahat, Grant Bruer, Trevor Dixon, Michael Goin, Grace Zhao, Jeremy Anantharaj, Catherine D. Schuman, Mark E. Dean, Garrett S. Rose, Nathaniel C. Cady and Joseph E. Van Nostrand, "The TENNLab Suite of LIDAR-Based Control Applications for Recurrent, Spiking Neuromorphic Systems," *44th Annual GOMACTech Conference*, Albuquerque, March, 2019.

Nathaniel Cady, Wilkie Olin-Ammentorp, Karsten Beckmann, Joseph Van Nostrand, Gangotree Chakma, Sherif Amer, Ryan Weiss, Sagarvarma Sayyaparaju, Mussabir Adnan, John Murray, Mark Dean, James S. Plank and Garrett Rose, ``Adapting Spiking Networks to Neuromorphic Hardware Subject to Process Variability," *44th Annual GOMACTech Conference*, Albuquerque, NM, March, 2019.

Sonia Buckley, Adam N. McCaughan, Jeff Chiles, Richard P. Mirin, Sae Woo Nam, Jeffrey M. Shainline, Grant Bruer, James S. Plank and Catherine D. Schuman, "Design of superconducting optoelectronic networks for neuromorphic computing," *IEEE International Conference on Rebooting Computing (ICRC 2018)*, November, 2018.

Adam W. Disney, James S. Plank and Mark Dean, "Four Simulators of the DANNA Neuromorphic Computing, Architecture" *ICONS: International Conference on Neuromorphic Systems*, ACM, July, 2018.

J. Parker Mitchell, Mark E. Dean, Grant Bruer, James S. Plank and Garett S. Rose, "DANNA 2: Dynamic Adaptive Neural Network Arrays," *ICONS: International Conference on*

Neuromorphic Systems, July, 2018.

John J. M. Reynolds, James S. Plank, Catherine D. Schuman, Grant Bruer, Adam W. Disney, Mark Dean and Garrett S. Rose, "A Comparison of Neuromorphic Classification Tasks," *ICONS: International Conference on Neuromorphic Systems*, July, 2018.

Catherine D. Schuman, Grant Bruer, Aaron Young, Mark Dean and James S. Plank , ``Understanding Selection and Diversity for Evolution of Spiking Recurrent Neural Networks," *IJCNN: The International Joint Conference on Neural Networks*, July, 2018.

Aaron R. Young, Mark E. Dean, James S. Plank, Garrett S. Rose and Catherine D. Schuman, ``Neuromorphic Array Communications Controller to Support Large-Scale Neural Networks," *IJCNN: The International Joint Conference on Neural Networks*, July, 2018.

Nicholas D. Skuda, Catherine D. Schuman, Gangotree Chakma, James S. Plank and Garrett S. Rose, ``High-Level Simulation for Spiking Neuromorphic Computing Systems ," *IEEE International Symposium on Circuits and Systems (ISCAS)*, May, 2018.

Gangotree Chakma, Nicholas D. Skuda, Catherine D. Schuman, James S. Plank, Mark E. Dean and Garrett S. Rose, ``Energy and Area Efficiency in Neuromorphic Computing for Resource Constrained Devices," *28th ACM Great Lakes Symposium on VLSI (GLSVLSI)*, May, 2018.

Nathaniel C. Cady, Karsten Beckmann, Wilkie Olin-Ammentorp, Gangotree Chakma, Sherif Amer, Ryan Weiss, Sagaryarma Sayyaparaju, Mussabir Adnan, John Murray, Mark Dean, James Plank, Garrett Rose and Joseph Van Nostrand, ``Full CMOS-Memristor Implementation of a Dynamic Neuromorphic Architecture," *43rd Annual GOMACTech Conference*, Miami, March, 2018.

James S. Plank, Garrett S. Rose, Mark E. Dean, Catherine D. Schuman and Nathaniel C. Cady, ``A Unified Hardware/Software Co-Design Framework for Neuromorphic Computing Devices and Applications," *IEEE International Conference on Rebooting Computing (ICRC 2017),* November, 2017.

J. Parker Mitchell, Grant Bruer, Mark E. Dean, James S. Plank, Garrett S. Rose and Catherine D. Schuman, ``NeoN: Neuromorphic Control for Autonomous Robotic Navigation, *IEEE 5th International Symposium on Robotics and Intelligent Sensors*, October, 2017.

Catherine D. Schuman, James S. Plank, Garrett S. Rose, Gangotree Chakma, Austin Wyer, Grant Bruer and Nouamane Laanait, ``A Programming Framework for Neuromorphic Systems with Emerging Technologies," *NanoCom: 4th ACM International Conference on Nanoscale Computing and Communication*, September, 2017.

Aleksander Klibisz, Grant Bruer, Catherine D. Schuman and James S. Plank, "Structure-based Fitness Prediction for the Variable-structure DANNA Neuromorphic Architecture," *IJCNN: The International Joint Conference on Neural Networks*, Anchorage, AK, May, 2017.

James S. Plank, Garrett S. Rose, Mark E. Dean and Catherine D. Schuman, "A CAD System for Exploring Neuromorphic Computing with Emerging Technologies," *42nd Annual*

GOMACTech Conference, Reno, NV, March, 2017.

Wilkie Olin-Ammentorp, Karsten Beckmann, Joseph E. Van Nostrand, Garrett S. Rose, Mark E. Dean, James S. Plank, Gangotree Chakma and Nathaniel C. Cady, "Applying Memristors Towards Low-Power, Dynamic Learning for Neuromorphic Applications," *42nd Annual GOMACTech Conference*, Reno, NV, March, 2017.

Catherine D. Schuman, J. Douglas Birdwell, Mark E. Dean, James S. Plank, and Garrett S. Rose, "Neuromorphic Computing: A Post-Moore's Law Complementary Architecture," *International Workshop on Post-Moore's Era Supercomputing (PMES)*, November, 2016.

Catherine D. Schuman, Adam Disney, Susheela P. Singh, Grant Bruer, J. Parker Mitchell, Aleksander Klibisz and James S. Plank, "Parallel Evolutionary Optimization for Neuromorphic Network Training," *Machine Learning in HPC Environments, Supercomputing 2016*, November, 2016.

Catherine D. Schuman, James S. Plank, Adam Disney and John Reynolds, "An Evolutionary Optimization Framework for Neural Networks and Neuromorphic Architectures," *IJCNN: International Joint Conference on Neural Networks*, Vancouver, CA, July, 2016.

Mark E. Dean, Jason Chan, Christopher Daffron, Adam Disney, John Reynolds, Garrett Rose, James S. Plank, J. Douglas Birdwell and Catherine D. Schuman, "An Application Development Platform for Neuromorphic Computing," *IJCNN: International Joint Conference on Neural Networks*, Vancouver, CA, July, 2016.

Mario Blaum, James S. Plank, Moshe Schwarz and Eitan Yaakobi, "Partial MDS (PMDS) and Sector-Disk (SD) Codes that Tolerate the Erasure of Two Random Sectors," *IEEE International Symposium on Information Theory*, Honolulu, HI, June, 2014.

James S. Plank, Kevin M. Greenan and Ethan Miller, "Screaming Fast Galois Field Arithmetic using Intel SIMD Instructions ," *11th USENIX Conference on File and Storage Technologies*, San Jose, CA, February, 2013. Acceptance rate: 19%.

James S. Plank, Mario Blaum and James L. Hafner, "SD Codes: Erasure Codes Designed for How Storage Systems Really Fail," *11th USENIX Conference on File and Storage Technologies*, San Jose, CA, February, 2013. Acceptance rate: 19%.

James S. Plank, Catherine D. Schuman and B. Devin Robison, "Heuristics for Optimizing Matrix-Based Erasure Codes for Fault-Tolerant Storage Systems," *DSN 2012: International Conference on Dependable Systems and Networks*, Boston, MA, June, 2012. Acceptance Rate: 17%.

Osama Khan, Randal Burns, James S. Plank, William Pierce and Cheng Huang, "Rethinking Erasure Codes for Cloud File Systems: Minimizing I/O for Recovery and Degraded Reads," *10th USENIX Conference on File and Storage Technologies*, San Jose, CA, February, 2012. Acceptance rate: 19%.

James S. Plank, "XOR's, Lower Bounds and MDS Codes for Storage," *IEEE Information Theory Workshop (ITW)*, Paraty, Brazil, October, 2011.

Osama Khan, Randal Burns, James S. Plank and Cheng Huang, “In Search of I/O-Optimal Recovery from Disk Failures,” *HotStorage '11, 3rd Workshop on Hot Topics in Storage and File Systems*, Portland, OR, 2011. Acceptance rate: 18%.

Jason Resch and James S. Plank, “AONT-RS: Blending Security and Performance in Dispersed File Systems,” *9th USENIX Conference on File and Storage Technologies*, San Jose, CA, February, 2011, pages 191-202. Acceptance rate: 27%.

Kevin M. Greenan, James S. Plank and Jay J. Wylie, ``Mean time to meaningless: MTTDL, Markov models and storage system reliability," *Hot Storage '10, 2nd Workshop on Hot Topics in Storage and File Systems*, Boston, MA, June, 2010.

Jianqiang Luo, Lihao Xu and James S. Plank, ``An Efficient XOR-Scheduling Algorithm for Erasure Codes Encoding,” *DSN-09: International Conference on Dependable Systems and Networks*, Lisbon, Portugal, June, 2009.

James S. Plank, Jianqiang Luo, Catherine D. Schuman, Lihao Xu and Zooko Wilcox-O'Hearn, “A Performance Evaluation and Examination of Open-Source Erasure Coding Libraries for Storage,” *The 7th USENIX Conference on File and Storage Technologies*, San Francisco, CA, February, 2009.

James S. Plank, “A New Minimum Density RAID-6 Code with a Word Size of Eight,” *NCA 2008: 7th IEEE International Symposium on Network Computing and Applications*, Cambridge, MA, July, 2008.

James S. Plank, “The RAID-6 Liberation Codes,” *The 6th USENIX Conference on File and Storage Technologies*, San Jose, California, February, 2008.

James S. Plank and Lihao Xu, “Optimizing Cauchy Reed-Solomon Coding for Fault-Tolerant Network Storage Applications,” *The 5th IEEE International Symposium on Network Computing Applications*, Cambridge, MA, July, 2006. Awarded best paper of the conference.

James S. Plank, Adam L. Buchsbaum, Rebecca L. Collins and Michael G. Thomason, “Small Parity-Check Erasure Codes – Exploration and Observations,” *DSN-2005: The International Conference on Dependable Systems and Networks*, Yokohama, Japan, June, 2005.

Rebecca L. Collins and James S. Plank, “Assessing the Performance of Erasure Codes in the Wide Area,” *DSN-2005: The International Conference on Dependable Systems and Networks*, Yokohama, Japan, June, 2005.

Micah Beck, Jean-Patrick Gelas, Dustin Parr, James S. Plank and Stephen Soltesz, “LoDN: Logistical Distribution Network,” *WACE’04 – Workshop on Advanced Collaborative Environments*, Nice, France, September, 2004.

Rebecca L. Collins and James S. Plank, “Downloading Replicated, Wide-Area Files -- a Framework and Empirical Evaluation,” *The 3rd IEEE International Symposium on Network Computing and Applications*, Cambridge, MA, USA, August, 2004.

James S. Plank and Michael G. Thomason, “A Practical Analysis of Low-Density Parity-

Check Erasure Codes for Wide-Area Storage Applications," *DSN-2004: The International Conference on Dependable Systems and Networks*, Florence, Italy, June, 2004.

Rebecca L. Collins and James S. Plank, "Content-Addressable IBP - Rationale, Design and Performance". *ITCC 2004, International Conference on Information Technology: Coding and Computing*, Las Vegas, NV, April, 2004.

Micah Beck, Terry Moore and James S. Plank, "An End-to-End Approach to Globally Scalable Programmable Networking," FDNA-*03: Workshop on Future Directions in Network Architecture*, in conjunction with *ACM SIGCOMM 2003,* Karlsruhe, Germany, August, 2003.

Alessandro Bassi, Micah Beck, Terry Moore, and James S. Plank, "The Logistical Backbone: Scalable Infrastructure for Global Data Grids," *Asian Computing Science Conference 2002*, Hanoi, Vietnam, December, 2002.

Micah Beck, Terry Moore, and James S. Plank, "An End-to-End Approach to Globally Scalable Network Storage," *ACM SIGCOMM 2002* Conference, Pittsburgh, PA, August, 2002.

Matthew S. Allen, Rich Wolski, and James S. Plank, "Adaptive Timeout Discovery using the Network Weather Service," *11th International Symposium on High Performance Distributed Computing (HPDC-11)*, Edinburgh, Scotland, July, 2002.

James S. Plank and Micah Beck, "The Logistical Computing Stack - A Design For Wide-Area, Scalable, Uninterruptible Computing," *Workshop on Scalable, Uninterruptible Computing, DSN 2002: Dependable Systems and Networks*, Bethesda, Maryland, June, 2002.

Alessandro Bassi, Micah Beck, Graham Fagg, Terry Moore, James S. Plank, Martin Swany, and Rich Wolski, "The Internet Backplane Protocol: A Study in Resource Sharing," *International Symposium on Cluster Computing and the Grid*, Berlin, Germany, May, 2002.

Scott Atchley, Stephen Soltesz, James S. Plank, Micah Beck, and Terry Moore, "Fault-Tolerance in the Network Storage Stack," *IEEE Workshop on Fault-Tolerant Parallel and Distributed Systems*, Ft. Lauderdale, FL, April, 2002.

James S. Plank, Rich Wolski and Matthew Allen, "The Effect of Timeout Prediction and Selection on Wide Area Collective Operations," *The IEEE International Symposium on Network Computing and Applications*, Cambridge, MA, February 11-13, 2002.

Micah Beck, Terry Moore and James S. Plank, Exposed vs. Encapsulated Approaches to Grid Service Architecture, *2nd International Workshop on Grid Computing*, Denver, CO, November, 2001.

M. Beck, D. Arnold, A. Bassi, F. Berman, H. Casanova, J. Dongarra, T. Moore, G. Obertelli, J. S. Plank, M. Swany, S. Vadhiyar and R. Wolski, "Logistical Computing and Internetworking: Middleware for the Use of Storage in Communication," *Third Annual International Workshop on Active Middleware Services*, San Francisco, August, 2001.

Wael Elwasif, James S. Plank, and Rich Wolski, "Data Staging Effects in Wide Area Task Farming Applications," *IEEE International Symposium on Cluster Computing and the Grid*, Brisbane, Australia, May, 2001, pp. 122-129.

Rich Wolski, James S. Plank, John Brevik and Todd Bryan, "G-commerce: Market Formulations Controlling Resource Allocation on the Computational Grid," *International Parallel and Distributed Processing Symposium (IPDPS)*, April, 2001.

Adnan Agbaria and James S. Plank, "Design, Implementation, and Performance of Checkpointing in NetSolve," *International Conference on Dependable Systems and Networks (FTCS-30 and DCCA-8)*, New York, NY, June, 2000.

James S. Plank, Micah Beck, Wael Elwasif, Terence Moore, Martin Swany and Rich Wolski, "The Internet Backplane Protocol: Storage in the Network," *NetStore '99: Network Storage Symposium*, Internet2, Seattle, WA, October, 1999.

Wael Elwasif, James S. Plank, Micah Beck and Rich Wolski, " IBP-Mail: Controlled Delivery of Large Mail Files," *NetStore '99: Network Storage Symposium*, Internet2, Seattle, WA, October, 1999.

Henri Casanova, MyungHo Kim, James S. Plank, Jack Dongarra, "Adaptive Scheduling for Task Farming with Grid Middleware," *5th International Euro-Par Conference*, August, 1999. pp. 30-43.

James S. Plank and Michael G. Thomason, "The Average Availability of Parallel Checkpointing Systems and Its Importance in Selecting Runtime Parameters," *29th International Symposium on Fault-Tolerant Computing*, Madison, WI, June, 1999, pp. 250-259.

James S. Plank and Wael Elwasif, "Experimental Assessment of Workstation Failures and Their Impact on Checkpointing Systems," *28th International Conference on Fault-Tolerant Computing*, Munich, June, 1998, pp. 48-57.

Yuqun Chen, James S. Plank and Kai Li, "CLIP - A Checkpointing Tool for Message-Passing Parallel Programs," *SC97: High Performance Networking & Computing*, San Jose, November, 1997.

Youngbae Kim, James S. Plank and Jack Dongarra, "Fault Tolerant Matrix Operations for Networks of Workstations Using Multiple Checkpointing," *High Performance Computing on the Information Superhighway, HPC Asia '97*, Seoul, Korea, April, 1997, pp 460-465.

Youngbae Kim, James S. Plank and Jack Dongarra, "Fault Tolerant Matrix Operations Using Checksum and Reverse Computation," *6th Symposium on the Frontiers of Massively Parallel Computation*, Annapolis, MD, October, 1996, pp. 70-77.

James S. Plank, "Improving the Performance of Coordinated Checkpointers on Networks of Workstations using RAID Techniques," *15th Symposium on Reliable Distributed Systems*, October, 1996, pp. 76-85.

James S. Plank, Youngbae Kim and Jack Dongarra, "Algorithm-Based Diskless Checkpointing for Fault Tolerant Matrix Operations," *25th International Symposium on Fault-Tolerant Computing*, Pasadena, CA, June, 1995, pp. 351-360.

James S. Plank, Micah Beck, Gerry Kingsley and Kai Li, "Libckpt: Transparent Checkpointing under Unix," *Usenix Winter 1995 Technical Conference*, New Orleans, LA, January, 1995, pp. 213-223.

James S. Plank and Kai Li, "Faster Checkpointing with N+1 Parity," *24th International Symposium on Fault-Tolerant Computing*, Austin, TX, June, 1994, pp. 288-297.

James S. Plank and Kai Li, "Performance Results of Ickp - A Consistent Checkpointer on the iPSC/860," *Scalable High Performance Computing Conference*, Knoxville, TN, May, 1994, pp. 686-693.

James S. Plank, "Jgraph - A Filter for Plotting Graphs in PostScript," *Usenix Winter 1993 Technical Conference*, San Diego, CA, January, 1993, pp. 63-68.

Kai Li, Jeffrey F. Naughton and James S. Plank, "Checkpointing Multicomputer Applications," *10th Symposium on Reliable Distributed Systems*, October, 1991, pp. 1-11.

Professional Tutorials

"Erasure Codes for Storage Systems," Tutorial for *USENIX Conference on File and Storage Technologies*, San Francisco, CA, February, 2013. With Cheng Huang (Microsoft Research). Program Chair: John Strunk.

"Erasure Codes for Storage Systems," Tutorial for *USENIX Conference on File and Storage Technologies*, San Francisco, CA, December, 2005. Program Chair: Garth Gibson.

Other Publications

Chao Tian, James S. Plank and Brent Hurst, ``An Open-Source Toolbox for Computer-Aided Investigation on the Fundamental Limits of Information Systems, Version 0.1," *arXiv:1910.08567*, October, 2019.

Catherine D. Schuman, Thomas E. Potok, Robert M. Patton, J. Douglas Birdwell, Mark E. Dean, Garrett S. Rose, James S. Plank, ``A Survey of Neuromorphic Computing and Neural Networks in Hardware," *arXiv:1705.06963*, May, 2017. (208 Citations as of April, 2020).

Catherine D. Schuman and James S. Plank, "An Exploration of Optimization Algorithms and Heuristics for the Creation of Encoding and Decoding Schedules in Erasure Coding," *Pursuit - The Journal of Undergraduate Research at the University of Tennessee*, Volume 3, #1, 2011, http://trace.tennessee.edu/pursuit/.

Invited Talks and Seminars

"The TENNLAB Exploratory Software Framework for Neuromorphic Computing", *Oak Ridge National Labs AI Workshop*, Oak Ridge, TN, September, 2019. Host: Tom Potok.

"Neuromorphic Benchmarks," International Conference on Neuormorphic Systems (ICONS), Knoxville, TN, July, 2019. Organizer: Catherine Schuman.

"The TENNLAB Exploratory Software Framework for Neuromorphic Computing – Demonstration", *Neuro-Inspired Computational Elements (NICE)*, Albany, NY, March, 2019. Host: Nathaniel Cady.

"A Software Stack for Neuromorphic Computing," Neuromorphic Computing Workshop: Architectures, Models, Applications, Knoxville, TN. July, 2017. Host: Tom Potok.

"Parallel Evolutionary Optimizations for Neuromorphic Computing Systems," *12th Scheduling for Large Scale Systems Worksho*p, Knoxville, TN. May, 2017. Host: George Bosilca.

"DANNA Neuromorphic Application Development Kit", 5th Neuro Inspired Computational Elements Workshop, San Jose, CA. March, 2017. Host: James Aimone.

"Recent Trends and Research in Erasure Coded Storage Systems," *Oak Ridge National Labs*, September, 2013. Host: Scott Atchley.

"Erasure Coded Storage Systems: Recent Work and a Game Changer," *University of North Carolina, Charlotte*, January, 2013. Host: Yongge Wang.

"Erasure Coding Research: Security, Performance and Power," *IBM Almaden Research Center*, San Jose, CA, February, 2011. Host: James L. Hafner.

"Heuristics for Reducing the Number of XOR's in Erasure Coding Systems," *Microsoft Research*, Redmond, WA, November, 2010. Host: Cheng Huang.

"Storage as a First Class Citizen in HPC Systems," *Clusters and Computational Grids for Scientific Computing,* Flat Rock, North Carolina, September, 2010. Hosts: Jack Dongarra and Bernard Tourancheau.

"MTTDL's Are Meaningless: Searching for a Better Metric for Storage Reliability," Outrageous Opinion, *FAST-2010: The 8th USENIX Conference on File and Storage Technologies*. Chair: Hakim Weatherspoon.

"Erasure Coding: Views from 10,000 Feet and Through a Magnifying Glass," *Clusters and Computational Grids for Scientific Computing,* Flat Rock, North Carolina, September, 2008. Hosts: Jack Dongarra and Bernard Tourancheau.

"The Attack on Raid-6," *Fall Seminar Series*, Department of Computer Science, Wayne State University, December, 2007, Host: Lihao Xu.

"Erasure Coding Research for Reliable Distributed and Cluster Computing," *Clusters and Computational Grids for Scientific Computing,* Flat Rock, North Carolina, September, 2006. Hosts: Jack Dongarra and Bernard Tourancheau.

"Decluttering and Improving the World of Erasure Codes," *2006 Perspectives on Dependability Workshop*, University of Texas at Austin, February, 2006. Workshop

Organizer: Lorenzo Alvisi.

"Exploring the Practical Properties of LDPC Erasure Codes in Wide-Area Storage Systems," *DCS Colloquium*, Rutgers University, April, 2005. Host: Liviu Iftode.

"The Network Storage Stack and The Logistical Runtime System," *Seminar*, IBM Austin Research Lab, February, 2004, Host: Mootaz Elnozahy.

"Logistical Networking and the Network Storage Stack," *Princeton 2002-2003 Colloquium Series*, Princeton University, Princeton, NJ, February, 2003, Host: Vivek Pai.

"The Storage Fabric of the Grid: The Network Storage Stack", *Cluster and Computational Grids for Scientific Computing (CCGSC)*, Faverges de la Tour, France, September, 2002, Hosts: Jack Dongarra and Bernard Tourancheau.

"Logistical Networking and the Network Storage Stack," *Intel Research Seminar Series*, Intel Research Pittsburgh, Pittsburgh, PA, August, 2002, Host: M. Satyanarayanan.

"Scalable, Uninterruptable Network Storage and Logistical Computing," *Workship on Scalable, Uninterruptible Computing, The International Conference on Dependable Systems & Networks*, Washington, D.C., June, 2002. Workshop Organizer: Dimiter Avresky.

"Dependability and the Grid -- Opinions and Recommendations," *Panel on Dependability and the Grid, The International Conference on Dependable Systems & Networks*, Washington, D.C., June, 2002. Panel Organizer: Rick Schlicting.

"Fault Tolerance in the Network Storage Stack," *Workshop on Scalable Fault Tolerance for Distributed Computing*, Computer Science Research Institute, Sandia National Labs, June, 2002. Workshop Organizers: Patricia Hough and Tom Bressoud.

"IBP-ster: Data Movement on the Grid," *Talk and software demonstration, SC01*, Denver, November, 2001. Hosts: National Partnership for Advanced Computing Infrastructure and the University of Tennessee Center for Information Technology Research.

"Logistical QoS through Application-Driven Scheduling of Remote Storage," *Next Generation Software Panel, 15th ACM International Conference on Supercomputing*, Sorrento, Italy, June, 2001. Host: Frederica Derema.

"G-Commerce: The Study and Building of Computational Economies for the Computational Grid," *Seminar Series*, Department of Computer Science, University of Alabama. April, 2001. Host: Brandon Dixon.

"G-Commerce: The Study and Building of Computational Economies for the Computational Grid," *Workshop on Clusters and Computational Grids for Scientific Computing*, Faverges de la Tour, France, September, 2000. Organizers: Bernard Tourancheau and Jack Dongarra

"Computer-Mediated Piano Performance: A Lecture/ Concert/ Demonstration," *Seminar Series*, Harvard University, Cambridge, MA, May, 2000. Host: Norman Ramsey.

"The Internet Backplane Protocol: Structure and Applications," *Seminar*, Argonne National Labs, September, 1999. Host: Ian Foster.

"Diskless Checkpointing Techniques and Their Place in Metacomputing Systems," *Workshop on Clusters and Computational Grids for Scientific Computing*, Townsend, TN, September, 1998. Organizers: Jack Dongarra and Bernard Tourancheau.

"Fast and Portable Checkpointing in Parallel Computing Environments," *Seminar*, University of Houston, Houston, TX, April, 1998. Host: Lennart Johnsson.

"Research Directions: Checkpointing Research at Tennessee," *Seminar*, Lucent Technologies, Murray Hill, NJ, April, 1997. Host: Emerald Chung.

"Compiler Assisted Memory Exclusion for Fast Checkpointing," *Seminar*, AT&T Laboratories, Murray Hill, NJ, January, 1996. Host: Chandra Kintala.

"New Techniques for Fast Checkpointing," *Seminar Series*, Brown University, November, 1994. Host: Robert Netzer.

"Efficient Checkpointing -- A Seminar," *Seminar Series*, Princeton University, March, 1994. Hosts: Kai Li, Edward Felten and Douglas Clark.

"Efficient Checkpointing of Multicomputers," *Seminar*, William and Mary, April, 1993. Host: Phil Kearns.

"Efficient Checkpointing in MIMD Architectures," *Seminar*, University of California at San~Diego, January, 1993. Host: Mohan Ahuja.

Released Software

An Open-Source Toolbox for Computer-Aided Investigation on the Fundamental Limits of Information Systems, Version 0.1," https://github.com/ct2641/CAI/releases/tag/0.1, October, 2019. (Written with Chao Tian and Brent Hurst).

GF-Complete: A Comprehensive Open Source Library for Galois Field Arithmetic: Revision 0.1 posted in February, 2013. Most recent revision: January, 2014. Support discontinued, November, 2014.

Jerasure: A Library in C/C++ Facilitating Erasure Coding for Storage Applications, September, 2007. Most recent revision: January, 2014.

Open Source Encoder and Decoder for SD Erasure Codes: February, 2013.

Uber-CSHR and X-Sets: C++ Programs for Optimizing Matrix-Based Erasure Codes for Storage Systems, December, 2010.

Galois.tar: Fast Galois Field arithmetic library for C/C++. April, 2007.

GFLib: A package for performing Reed-Solomon coding for storage systems. April, 2003.

LoRS: Tools for aggregation of network storage depots. January, 2002.

IBP: A tool serving writable storage as a network resource to remote clients. Initial release, October, 1999.

CLIP: A tool for checkpointing and restarting programs on the Intel Paragon. Released in May, 1997.

Libckpt: A tool for checkpointing and restarting programs under Unix. Released in August, 1994.

Ickp: a tool for checkpointing and restarting distributed programs on the Intel iPSC/2 and iPSC/860 multicomputers. Alpha version released in November, 1992. Newest release: May, 1994.

Jgraph: A very popular graphing tool, now included in most installations of Unix. Released in 1989.

Teaching

Received the College of Engineering Teaching Fellow award in 2010 and 2017. The field for this award was composed of all faculty in the college.

ACM/IEEE/Systers CS Faculty of the Year, 2014.

Received recognition for teaching by the UTK Living and Learning Communities, 2014.

Received the 2012 Gonzalez Family Teaching Excellence Award. The field for this award was composed of all faculty in the EECS department.

Received the 2008 UT Chancellor's Award for Excellence in Teaching in 2008. The field for this award was composed of all faculty in the University.

Received "Senior Faculty Teaching Award" for the College of Arts and Sciences for 2003-2004. The field for this award was composed of all faculty in Arts and Sciences with 10 or more years of experience. The award came with $1000 for my program.

Received "ACM Faculty Member of the Year" departmental teaching award in 1995, 1997, 1999, 2001, 2003, 2005 and 2006.

Have developed six undergraduate/graduate courses:

CS102: Introduction to Programming
CS140: Data Structures and Algorithms I
CS302: Data Structures and Algorithms II
CS360: Systems Programming
CS494: Scripts and Utilities
CS494/594: Advanced Algorithms and Programming
CS460/CS560: Operating Systems

Have also taught the following courses:

FYS129: Duplicate Bridge (Freshman First-Year Study Seminar)
CS593: Program Committee
CS594: Fault Tolerance and Other Concepts
CS660: Advanced Operating Systems and Fault Tolerance

Professional Service

(PC) = Program committee member.

PC: *ICRC-2020: IEEE International Conference on Rebooting Computing.*
PC: *FAST-2014: The 12th USENIX Conference on File and Storage Technologies*.
PC: *FAST-2012: The 10th USENIX Conference on File and Storage Technologies*.
PC: *DSN-2012: International Conference on Dependable Systems and Networks*.
PC: *FAST-2011: The 9th USENIX Conference on File and Storage Technologies*.
PC: *HotDep 2011: 7th Workshop on Hot Topics in System Dependability.*
PC: *FAST-2010: The 8th USENIX Conference on File and Storage Technologies***.**
PC: *FAST-2009: The 7th USENIX Conference on File and Storage Technologies***.**
Team Member: *2008 DARPA Study on Resilience in Extreme Scale Computing.*
PC: *NCA-2008: International Symposium on Network Computing Applications***.**
PC: *DSN 2008: International Conference on Dependable Systems and Networks***.**
PC: *DSN 2007: International Conference on Dependable Systems and Networks***.**
PC: *NCA-07: International Symposium on Network Computing Applications***.**
Panel Member: *National Science Foundation CCR Panel.* April, 2007.
Associate Editor: *IEEE Transactions on Parallel and Distributed Systems*. 2003 - 2006.
PC: *DSN 2006: International Conference on Dependable Systems and Networks*.
PC: *HPDC 2004: High Performance Distributed Computing*.
PC: *DSN 2004: International Conference on Dependable Systems and Networks*.
PC: *DSN 2003: International Conference on Dependable Systems and Networks*.
Program Co-Chair: *NCA-03: Intern'l Symposium on Network Computing Applications*.
PC: *DSN-2002: International Conference on Dependable Systems and Networks*.
PC: *NCA-02: International Symposium on Network Computing Applications*.
PC: *NCA-01: International Symposium on Network Computing Applications*.
Program Co-Chair: *Netstore '99: Network Storage Symposium*.
PC: *FTCS-30: International Conference on Dependable Systems and Networks*.
PC: *ICDCS '99: 19th IEEE International Conference on Distributed Computing Systems.*
PC: *ICPP '98: International Conference on Parallel Processing*.
PC: *IPPS '97: International Parallel Processing Symposium*.

University Service

Research for High School Students: See 2016 below – did the same in 2017.

Research for High School Students: Hosted four high school students for a week in July, 2016 as part of the HITES 11 program. Mentored them in research on Neuromorphic computing.

Panelist: University workshop on effective practices in undergraduate research, March, 2011.
Panelist: University workshop on funding for undergraduate research, November, 2010.

Public Service Lectures

Lecture: "*Neuromorphic computing systems*", February, 2020. Knoxville Python User's Group Meeting. (Co-Lecture with Catherine Schuman).

Lecture: *Intellectual Property Stories from the Perspective of a Scientist,* September, 2018. University of Tennessee Haslam Scholars Seminar.

Lecture: *Intellectual Property Stories from the Perspective of a Scientist,* August, 2017. University of Tennessee College Scholars Seminar.

Keynote Address/Motivational Speaker: *Undergraduate Research and Graduate School*. September, 2016. GEM GRAD Lab: Getting Ready for Advanced Degrees – 2-Day conference. Conference Organizer, Travis Griffin (UT COE Office of Diversity).

Keynote Address: *Undergraduate Research*. September, 2014. Undergraduate Research/Graduate School (URGS) Retreat. 2-day conference sponsored by NSF Funded TN-SCORE Program (Tennessee Solar Conversion and Storage using Outreach, Research and Education). University of Tennessee. Conference Organizer, Travis Griffin (UT COE Office of Diversity).

Lecture: *Why Research?* August, 2014. Bazinga!! (The Tennessee Systers all-day event for incoming freshmen.)

Lecture: *Undergraduate Research*. October, 2013. Tennessee Louis Stokes Alliance for Minority Participation (TLSAMP).

Lecture/Demonstration: *Research as a Career, and Storage Research Demonstration*. Summers, 2011, 2012, 2013. Host: University of Tennessee HITES Program (High School Introduction to Engineering Systems) for rising 11^{th} and 12^{th} grade students from underrepresented groups (African American, Hispanic, Native American and women) in Engineering.

Lecture: *Careers in Computer Science*. July, 2008. Host: University of Tennessee Upward Bound program, for college-bound students of low income households.

Lecture/Demonstration: *Science as a Career, Computer Science Research*: Math and Science Regional Center, Pre-College Enrichment Program, June, 2007. Host: University of Tennessee. This program is hosted by the University every summer, and is composed of 55-60 high school students from the Southeastern United States. These students are from low-income families where neither parent holds a bachelor's degree. The point of the program is to kindle the spirit of these students and to provide math and science experiences not offered in the traditional high school classroom environment.

Lecture/Demonstration: *Computer-Mediated Piano Performance*: Three separate lecture/demonstrations for a total of roughly 120 8^{th} grade students from Robertsville Middle School, who came to visit our department, October, 2005. Host: Mike Berry.

Lecture/Demonstration: *Being a Professor – Research and Technology*: Bearden Elementary School, September, 2005. Host: Sherri. Fisher.

Lecture/Demonstration: *Computer-Mediated Piano Performance*, Atria at Weston Place Nursing Home, Summer, 2001. Arranged through the UT speakers' bureau.

Lecture/Demonstration: *Computer-Mediated Piano Performance*, Austin-East High School, Knoxville, TN. February, 2001. Arranged through the UT speakers' bureau. Host: Debbie Lehman.

Lecture/Demonstration: *Computer-Assisted Piano Performance*, University of Tennessee public speech. March, 1999.

Graduate Students Advised (Most Recent to Least Recent)

- Charles Rizzo, PhD. Graduating in 2023.
- Nicholas Skuda, PhD. Graduating in 2021.
- Brent Hurst, MS. Graduating in 2020.
- John Reynolds. PhD. Graduated in 2019.
- Grace Zhao, MS. Graduated in 2018.
- Adam Disney. PhD. Graduated in 2018.
- Ksenia Burova. MS. Graduated in 2018.
- Jacob Davis. MS. Graduated in 2017.
- Michael Peek. MS. Studies on hold, 2016.
- Shawn Cox. MS. Graduated in 2016.
- Bryan Burke. MS. Graduated in 2015.
- Michael Jugan, MS. Graduated in 2013.
- Taylor Morris. MS. Graduated in 2013.
- William Pierce. MS. Graduated in 2013.
- Scott Simmerman. MS. Graduated in 2009.
- Mayank Saraigi. MS. Graduated in 2006.
- Rebecca Collins. MS. Graduated in 2004.
- Wael Elwasif. PhD. Graduated in 2004.
- Kim Buckner. PhD. Graduated in 2003.
- Linzhen Xuan. MS. Graduated in 2003.
- Scott Atchley. MS. Graduated in 2002.
- Haihang You. MS. Graduated in 2001.
- Rachel Huff. MS. Graduated in 1999.
- Ansel Robateau. MS. Graduated in 1999.
- Dorian Arnold. MS. Graduated in 1998
- Lee Hamner. MS. Graduated in 1998.
- Michael Puening. MS. Graduated in 1997.
- Darryl Pace. MS. Graduated in 1997.

Undergraduate Students Advised (Most Recent to Least Recent)

- John Carmack, 2020.
- ChaoHui Zheng, 2020.
- Kody Bloodworth, 2019, 2020.
- Ankush Patel, 2019, 2020.
- Sydney Shelby, 2019.
- Jeremy Anantheraj, 2018.

- Kirolos Shahat, 2018.
- Leroy Todd, 2018.
- Christopher Dean, 2018.
- Charles Rizzo, 2018, 2019.
- MaryBeth Burst, 2017.
- Michael Goin, 2017, 2018, 2019.
- Grace Zhao, 2017, 2018.
- Trevor Dixon, 2017, 2018.
- Nicholas Skuda, 2017.
- Ksenia Burova, 2017.
- Phillip McKnight, 2016, 2017.
- Victoria Florence: 2016.
- Alex Klibisz: 2015, 2016.
- Grant Bruer: 2016, 2017, 2018.
- Aaron Young: 2016.
- Kelley Deuso: 2015.
- John Burnum: 2013, 2015 Haslam Scholar Advisor.
- John Reynolds: 2014, 2015.
- Shawn Cox: 2014.
- Ben Arnold: 2013.
- Allen McBride: 2013.
- Adam Disney, 2012, 2013.
- Andrew LaPrise: 2012.
- Taylor Morris: 2012.
- Michael Jugan: 2011.
- Will Houston: 2011.
- Parth Deshmukh: 2010, 2011.
- William Pierce: 2010, 2011.
- Josh Chandler: 2010.
- Devin Robison: 2009, 2010.
- Catherine Schuman: 2008, 2009, 2010, Honors Thesis Advisor.
- Don Lopez: 2009.
- Kevin Hudson: 2009.
- John Garrison: 2005.
- Isaac Charles: 2005.
- Rebecca Collins: 2003.
- Stephen Soltesz: 2002.
- Matthew Allen: 2001.
- Alex Cruikshank: 1995.