Curriculum Vitae

ANTHONY SKJELLUM, PhD

University of Alabama at Birmingham
Dept. of Computer and Information Sciences
College of Arts and Sciences

Education

PhD: Chemical Engineering, Minor in Computer Science, California Institute of Technology, June 1990
Dissertation Title: Concurrent Dynamic Simulation: Multicomputer Algorithms Research Applied to Ordinary Differential-Algebraic Process Systems in Chemical Engineering
[31 citations per Google Scholar as of January, 2011]

M.S.: Chemical Engineering, California Institute of Technology, June 1985
B.S. (Honors): Physics, California Institute of Technology, June 1984

Employment

University of Alabama at Birmingham, Department of Computer and Information Sciences
- Professor and Chair, August 2003 - present

Mississippi State University, Dept. of Computer Science and Engineering, January 1993 – July 2003
- Director, NSF ERC High Performance Computing Laboratory, January 1997-July 2003
- Tenured Associate Professor, 1997
- Associate Professor, 1996
- Assistant Professor (Tenure earning), 1993

Lawrence Livermore National Laboratory, 1990-93
- Computer Scientist

Entrepreneurial activities have included these additional outside activities:
- President, MPI Software Technology, Inc, 1996-2002
- Chief Technology Officer, MPI Software Technology, Inc, 2002-2004
- Chief Software Architect, Verari Systems Software (Formerly MPI Software Tech.), 2004-2009.
- Co-Founder, RunTime Computing Solutions, LLC, 2009.

Professional Activities

Chapter Author, “Persistence,” MPI-3 Standard, MPI Forum, 2010-present.

Editorial Board, *Parallel Computing*, March 1992-December 1995
Editorial Board, *The International Journal of Supercomputer Applications and High Performance Computing*, November 1993-2000
Editorial Board, *Concurrency: Practice & Experience*, 1994-present
Sub-committee Chair, Message Processing Interface (MPI) Standards Committee III, 2010-present (Persistent Communications Working Group),
Co-Chair, Real-Time Message Passing Interface (MPI/RT) Forum, 1997-present
Sub-committee Chair, BLAS Technical Forum (Lite BLAS/ BLAIS), 1995-98
Sub-committee Chair, Message Processing Interface (MPI) Standards Committee II, 1995-96 (Collective Chapter), 1995-97 (Real-Time)
Sub-committee Chair, Message Processing Interface (MPI) Standards Committee, 1993-94
Newsletter Co-Editor (with Andrew Lumsdaine), Society of Industrial and Applied Mathematics (SIAM) Supercomputing Activity Group
Chair, MPIDC '99, Atlanta, GA, March 9-12, 1999
Organizing Committee of MPIDC '95 and MPIDC '96, Notre Dame, IN
Chair, 1997 Gordon Conference on HPC/II, Plymouth, NH, July 1997
Co-Chair, (Daniel Reed, Chair) 1995 Gordon Conference on HPC/II, Plymouth, NH, July 1995
Co-Chair, (Jack Dongarra, Chair; Co-Chair: David Walker), 1992 Gordon Conference on HPC/II (Previous name Software Tools and Libraries for HPC), Plymouth, NH, July 1992
Program Director, SIAM Supercomputing Activity Group, January 1994-December 1996
Editor, *Proceedings of MPIDC '99*, March 1999
Editor, *Proceedings of the Scalable Libraries Conference*, October 1994
Editor, *Proceedings of the Scalable Libraries Conference*, October 1993
Invited participant, Second Pasadena Workshop on System Software and Tools for High-Performance Computing Environments (Pasadena II), January 1995

Awards and Honors

Mississippi Business Journal, "Top 40 Under 40 Award," January 21, 2002
College of Engineering Hearin Eminent Scholar, 2001-03
1999 College of Engineering Outstanding Engineering Research Award
MSU Alumni Association Research Award, May 1998
College of Engineering Hearin-Hess Distinguished Professor, 1996-97 and 1997-98
MSU ACM Student Chapter Computer Scientist of the Year Award, May 1994
Best Student Paper in Operating Systems Area (First Prize) "Zipcode: A Portable Multicomputer Communications Library atop the Reactive Kernel," Fifth Distributed Memory Computing Conference, Charleston, South Carolina, April 1990
Runner-Up Student Paper in Applications Area, ALU Factorization of Sparse, Unsymmetric Jacobian Matrices on Multicomputers, Fifth Distributed Memory Computing Conference, Charleston, SC, April 1990.
IBM Tau Beta Pi Award (California Institute of Technology), writing competition, 1981

Grants and Contracts

"NSF EAGER Grant, Research in Peer File System," A. Skjellum, PI; also joint funding with Clemson University, 2010-2011. UAB funding is $67,000.

Funding from Sandia National Laboratories for Work on Peer File System Research, 2009-2010 (on-going). Initial funding level: $80,000. A. Skjellum, PI at UAB. Also funded are Clemson University and University of Minnesota on separate contracts.

"Cybercrime and Security: A Model State Partnership," United States Department of Justice, Bureau of Justice Assistance. ($500K over 1 year). John J. Sloan, III and Anthony Skjellum (Co-

Principal Investigators). Grant #2010-DD-BX-0603, 2010.

"UAB Anti-Cybercrime Computational Operation," Edward J. Byrne Memorial State and Local Justice Assistance Grant ($447K over three years). John J. Sloan III and Anthony Skjellum (Co-Principal Investigators). Grant #2008-DD-BX-0407, 2008.

"Support for UAB Computer Forensics Laboratories Project," United States Department of Justice, Office of Community Oriented Policing Service (COPS), COPS Technology Grant. FY 2006 ($987K over 3 years). John J. Sloan, III and Anthony Skjellum (Co-Principal Investigators). Grant #2006-CKWX-0582, 2006.

"MRI: Computer and Information Sciences Grid Node Research Facility," National Science Foundation, August 15, 2004-July 31, 2007. This is a $250,000 equipment grant, with $107,000 of matching to create the CIS Department's "Grid Node" or "Grid Cluster." Role: PI, with six co-PIs.

"Collaborative Research: A Systematic Approach to the Derivation, Representation, Analysis, and Correctness of Dense and Banded Linear Algebra Algorithms for HPC Architectures," National Science Foundation, July 1, 2003-June 30, 2006 [extended to June 30, 2007]. This project seeks to advance the understanding of how to gain more performance, predictability, and correctness from scalable and cache-memory oriented algorithms key to many scientific applications. Role: PI (at UAB), co-PI of the overall proposal.

"ALGORITHMS: Collaborative Research: New Contributions to the Theory and Practice of Programming Linear Algebra Libraries," National Science Foundation. August 1, 2002-July 31, 2003, Role: PI at MSU, Co-PI of overall proposal.

"NGS: Computational Vortals for Next-Generation Scalable Computing," National Science Foundation, December 1, 2001 – December 1, 2004, This grant addresses the use of grid computing and portal-based computing in order to advance scientific problem solving environments. Role: Co-Principal Investigator

"Integration of Fuzzy Data Mining with High Performance Scalable Computing: Intrusion Detection, Fault Detection, and Performance Monitoring," BMDO (DEPSCoR), $623,963, April 2001 - March 2004 (Other PIs: Rayford Vaughn and Susan Bridges).

"A QOS-Based Approach to Clustering and Interclustering with a Unified Methodology for Scalability, Security, Performance, Fault-Handling, and Co-Scheduling," National Science Foundation, $220,000, September 1, 2000 – August 31, 2002, (other PI: Rayford Vaughn).

"A Gigabit/s, VIA-Enabled Cluster Architecture for Research in High Performance Systems Software, Scalable Knowledge Discovery, Visualization, and Parallel Planning Under Uncertainty" National Science Foundation CISE Instrumentation Program, $214,939, July 1, 1999 - June 30, 2002 (Other PIs: Julia Hodges, Lois Boggess, Susan Bridges, Donna Reese, Raghu Machiraju, and Eric Hansen).

"Distributed Intrusion Detection Using Fuzzy Data Mining Applied to High Performance Cluster Computation," U.S. Department of Army Research Laboratory, $153,983, September 2000-September 2002 (Other PIs: Rayford Vaughn and Susan Bridges).

"Parallelizing a FORTRAN90 SWAFS Code with MPI," Mississippi Research Consortium, $42,500, October 1, 1998 - February 28, 1999.

"The Scalable Knowledge Discovery Initiative," Hearin Foundation, $49,000, May 16, 1998 - May 15, 1999 (Other PIs: Julia Hodges, Susan Bridges, and Raghu Machiraju).

"Parallelizing a FORTRAN90 SWAFS Code for CRAY T3E with MPI," Lockheed-Stennis, $14,000, December 1, 1997 - February 28, 1998 (PI; co-PIs: Ioana Banicescu and Raghu Machiraju).

"Heterogeneous Embedded Real-Time Systems Environment," Integrated Sensors, Inc. [DARPA BAA 9706 subcontract], $400,000, July 1, 1997 - June 30, 2000.

"Parallel Mathematical Libraries Project II," DOE/USIC/LLNL, $80,000, January 1, 1998 - December 31, 1998.

"MPICH Technology and Optimizations for the Cray T3E," CEWES MSRC focused effort, $20,000, December 1, 1997 - June 30, 1998.

"Support for Scalable CFD and MPI," CEWES MSRC focused effort, $60,000, April 1, 1997 - March 30, 1998 (PI; Co-PI: Puri Bangalore).

"Technical Computing on Intel Platforms and Scalable Interface for Evolving, Mass-Market PC Applications (supplement)," Intel Software Technology Laboratory, Amount: $45,076, December 1, 1996.

"Myrinet 4.1 Memory-Mapped Device Driver Development for Windows NT Systems," Myricom, Inc, $10,000, December 1, 1996 - January 31, 1997.

"Intel Software Grant," Intel, $18,000, October 1996.

"Development of MPI and Myrinet Technologies for a Secure, Heterogeneous Application Runtime Environment for High Performance Computing (SHARE-HPSC)," Sanders (Lockheed-Martin), subcontract of DARPA contract, $208,523, September 1995 - November 1997.

"Revolutionary Advances in Ubiquitous, Realtime, Multicomputers and Runtime Environments," DARPA/US Air Force Rome Laboratory, $1,250,000, October 1996 - June 1999 (joint project with University of Maryland).

"Tactical Advanced Signal Processor Effort (TASP)," U.S. Navy, $125,000, 1999.

"Tactical Advanced Signal Processor Effort (TASP)," U.S. Navy, $95,000, 1997.

"Parallel Mathematical Libraries Project," DOE/USIC/LLNL, $60,000, July 11, 1996 - December 31, 1997.

"Intel Paragon MPI and ATM Research," Intel, $230,000, July 1996.

"ATM-based Heterogeneous MPI for the P6 Paragon Multicomputer and 4-Way P6 Multiprocessor," Intel, $31,000, January 1, 1996 - December 31, 1998.

"Embedded Message Passing Interface (eMPI) for the Advanced Common Processor," Sanders (Lockheed-Martin, Hudson, NH), $33,000, August 1, 1996 - December 20, 1996.

"The Multicomputer Toolbox," Lawrence Livermore National Laboratory, $670,000, 1991-92.

"Dynamic Process Simulation on Computers with Parallel Architectures," National Science Foundation, $11,000, 1995-1996 (no cost extension of original grant).

"The Parallel Mathematical Libraries Project," United States Industry Coalition, Inc. (USIC; collaboration among LLNL (Dept. of Energy), the Russian Federal Nuclear Center, Arzamas-16 (VNIIEF/Sarov), Intel, and MSU), $35,000, September 1995.

"Technical Computing on Intel Platforms; Scalable Interfaces for Evolving, Mass-Market PC Applications," Intel, Inc., $76,000 (approximate), September 1995.

"A Multi-Faceted Study of Scalable Parallelism for Computational Science and Engineering," Skjellum and Lumsdaine (Notre Dame), National Science Foundation, Co-PIs, period of performance: September 15, 1995-August 14, 1998, MSU part of budget: $180,000, ND part of budget $180,000 (both over three years). (Funded unsolicited proposal to CISE ASC Directorate).

"Innovative High Performance Distributed Computing Research and Education: Parallel Algorithms, Libraries, Computational Models, and Distributed Services," National Science Foundation Career Award, $124,800, September 1, 1995 - August 31, 1998.

"High Performance Research and Technology for Parallel Programming based on Embedded and Real-time Extensions of the Message Passing Interface (MPI) and MsgWay Protocol," DARPA, $1,386,847, September 1, 1995 - June 30, 1998.

"Collaborative Research and Development of MPI and Myrinet Technologies for Embedded High Performance Computing," Martin-Marietta Laboratories, $57,656, March-December, 1995.

"National High Performance Distributed Computing Consortium," U.S. Army Corps of Engineers Waterways Experiment Station, $75,000, September 1, 1995 - April 30, 1998.

"Parallel Solution, Grid Generation, and Visualization of Turbo-Machinery Grand Challenge Problems," Department of Energy, $254,598, October 1, 1994 - September 30, 1996, in cooperation with Sandia National Laboratories (co-PIs: D. Reese, E. Luke, and D. Barnette).

Publications

Refereed Journal Papers

Matthew L. Curry, Anthony Skjellum, H. Lee Ward, and Ron Brightwell*, "*Gibraltar: A Library for RAID-Like Reed-Solomon Coding on Programmable Graphics Processors,*"* Concurrency and Communication: Practice and Experience, in press, 2011.

Wardman, Bradley, Warner, Gary, McCalley, Heather, Turner, Sarah, Skjellum, Anthony "Reeling in Big Phish with a Deep MD5 Net," Journal of Digital Forensics, Security and Law. 5(3), 2010.

Suman Roychoudhury, Jeff Gray, Jing Zhang, Purushotham Bangalore, Anthony Skjellum: A Program Transformation Technique to Support AOP within C++ Template. Journal of Object Technology 9(1): 143-160, 2010.

Chun Wei, Alan Sprague, Gary Warner, Anthony Skjellum: Mining spam email to identify common origins for forensic application. SAC 2008: 1433-1437

Zhijie Guan, Francisco Hernández, Purushotham Bangalore, Jeffrey G. Gray, Anthony Skjellum, Vijay Velusamy, Yin Liu: Grid-Flow: a Grid-enabled scientific workflow system with a Petri-net-based interface. Concurrency and Computation: Practice and Experience 18(10): 1115-1140 (2006). [49 citations per Google Scholar as of January, 2011].

Florez, G., Liu, Z, Bridges, S., Skjellum, A., and Vaughn, R. "Lightweight Monitoring of MPI Programs in Real-time," *Concurrency and Computation: Practice & Experience*, 2005.

Vijay P. Shah, Nicolas H. Younan, Torey Alford, Anthony Skjellum: A spectral estimation toolkit for Java applications. Sci. Comput. Program. 54(1): 125-142 (2005)

Skjellum, A., A. Kanevsky, Y. Dandass, et al, "The MPI/RT 1.0 Real-Time Message Passing Standard," *Concurrency and Computation Practice and Experience 16*(S1): 0-322 (2004), pp. 0-322, December 2004.

Florez, G., Liu, Z, Bridges, S., Skjellum, A., and Vaughn, R., "Detecting Anomalies in High-Performance Parallel Programs" The Journal of Digital Information Management, vol 2, no 2, June 2004, pp. 44-47.

Rajanikanth Batchu Yoginder S. Dandass, Anthony Skjellum, Murali Beddhu: MPI/FT: A Model-Based Approach to Low-Overhead Fault Tolerant Message-Passing Middleware. Cluster Computing 7(4): 303-315 (2004). [22 citations per Google Scholar as of January, 2011].

Valsalam, V, and A. Skjellum, "*A Framework for High-Performance Matrix Multiplication Based on Hierarchical Abstractions, Algorithms and Optimized Low-level Kernels,*" *Concurrency and Computation: Practice & Experience, Vol 14(10), pp. 805-839.* [35 citations per Google Scholar as of January, 2011]

Skjellum, A, R. Dimitrov, S. Angaluri, D. Lifka, G. Coulouris, P. Uthayopas, S. Scott, R. Eskicioglu, *Cluster Computing White Paper, "Operating Systems" paper, Mark Baker, ed, Spring 2001 issue of Int. Journal of High Performance Computing Applications.*

Protopopov, B., and A. Skjellum, "A Multithreaded Message Passing Interface (MPI) Architecture: Performance and Program Issues," *Journal of Parallel and Distributed Computing*, Vol. 61, No. 4, April 2001, pp. 449-466. [29 citations per Google Scholar as of January, 2011]

Skjellum, A., D.G. Wooley, Z. Lu, M. Wolf, P.V. Bangalore, A. Lumsdaine, J.M. Squyres, and B. McCandless, "Object-Oriented Analysis and Design of the Message Passing Interface," *Concurrency and Computation: Practice & Experience,* Vol. 13, No. 4, 10 April 2001, pp. 245-292.

Protopopov, B., and A. Skjellum, "Shared-Memory Communication Approaches for an MPI Message-Passing Library," *Concurrency: Practice & Experience*, Vol.12, No. 9, 2000, pp. 799-820.

Carpenter, B., V. Getov, G. Judd, A. Skjellum, and G. Fox, "MPI-Like Message Passing for Java," *Concurrency: Practice & Experience,* Vol. 12, No. 11, 2000, pp. 1019-1038. [50 citations per Google Scholar as of January, 2011].

Skjellum, A., and others, "MPI 2: A Message-Passing Interface Standard," *International Journal of Supercomputer Applications and High Performance Computing,* Vol. 12, No. 1/2, 1998, pp. 139-157.

Li, J., A. Skjellum, R.D. Falgout, "A Poly-Algorithm for Parallel Dense Matrix Multiplication on Two-Dimensional Process Grid Topologies," *Concurrency: Practice and Experience,* Vol. 9, No. 3, 1997. [36 citations per Google Scholar as of January, 2011].

Gropp, W., E. Lusk, N. Doss, and A. Skjellum, "A High-Performance, Portable Implementation of the MPI Message-Passing Interface Standard," *Parallel Computing,* Vol. 22(6), September 1996, pp. 789-828. [IMPACT: 1,828 citations on Google Scholar as of January, 2011.]

Skjellum, A., E. Lusk, and W. Gropp, "Early Applications in the Message-Passing Interface," *International Journal of Supercomputing Applications,* June 1995 (invited paper).

Skjellum, A., S.G. Smith, N.E.Doss, A.P. Leung, M. Morari, "The Design and Evolution of Zipcode," *Parallel Computing*, April 1994, pp. 565-96 (invited paper). [58 citations per Google Scholar as of January, 2011].

Skjellum, A., "MPI: A Message-Passing Interface Standard," *International Journal of Supercomputer Applications and High Performance Computing,* Vol. 8, No. 3/4, 1994, pp. 311-356.

Refereed Conference Papers

Matthew L. Curry, A. Skjellum, Lee Ward, Ron Brightwell. Accelerating Reed-Solomon coding in RAID systems with GPUs. IPDPS'2008. pp.1-6 . [17 citations per Google Scholar as of January, 2011]

Vijay Velusamy, Anthony Skjellum: Quality of Service support for Grid Storage Environments. GCA 2006: 134-140.

Vijay Velusamy, Changzheng Rao, Srigurunath Chakravarthi, Jothi P. Neelamegam, Weiyi Chen, Sanjay Verma, Anthony Skjellum: Programming the InfiniBand Network Architecture for High Performance Message Passing Systems. ISCA PDCS 2003: 391-398.

Rossen Dimitrov, Anthony Skjellum: Software Architecture and Performance Comparison of MPI/Pro and MPICH. International Conference on Computational Science 2003: 307-315.

Srigurunath Chakravarthi, C. R. Krishna Kumar, Anthony Skjellum, H. A. Prahalad, Bharath Seshadri: A Model for Performance Analysis of MPI Applications on Terascale Systems. PVM/MPI 2003: 81-87.

Rajanikanth Batchu, Anthony Skjellum, Zhenqian Cui, Murali Beddhu, Jothi P. Neelamegam, Yoginder S. Dandass, Manoj Apte: MPI/FT™: Architecture and Taxonomies for Fault-Tolerant, Message-Passing Middleware for Performance-Portable Parallel Computing. CCGRID 2001: 26-33. [63 citations per Google Scholar as of January, 2011]

Apte, Manoj, Srigurunath Chakravarthi, Jothi Padmanabhan, and Anthony Skjellum, "A Synchronized Real-Time Linux Based Myrinet Cluster for Deterministic High Performance Computing and MPI/RT," *Proceedings of the Workshop on Parallel and Distributed Real-Time Systems,* San Francisco, CA, April 2001 (available on CD-ROM).

Wooley, Bruce, Susan Bridges, Julia Hodges, and Anthony Skjellum, "Scaling the Data Mining Step in Knowledge Discovery Using Oceanographic Data," *Proceedings of IEA/AIE,* 2000, pp. 85-92.

Apte, Manoj, S. Chavravarthi, A. Pillai, A. Skjellum, X. Zan, "Time Based Linux for Real-Time NOWs and MPI/RT," *Proceedings of the IEEE Real-Time Systems Symposium,* 1999, pp. 220-222.

Wooley, Bruce, Yoginder Dandass, Susan Bridges, Julia Hodges, and Anthony Skjellum, "Scalable Knowledge Discovery from Oceanographic Data," *Proceedings of the Artificial Neural Networks in Engineering Conference (ANNIE '98),* St. Louis, MO, November 1998.

Kanevsky, A., A. Skjellum, and A. Rounbehler, "MPI/RT - Emerging Standard for High-Performance Real-Time Systems," *Proceedings of the Hawaii International Conference on System Sciences (HICSS-31) Vol. III,* Maui, Hawaii, January 1998, pp. 157-164.

Geist, A., W. Gropp, S. Huss-Lederman, A. Lumsdaine, E. Lusk, W. Saphir, A. Skjellum, and M. Snir, "MPI-2: Extending the Message-Passing Interface," Euro-Par '96.

Skjellum, A., P. Vaughan, D. Reese, and F. Cheng, "Migrating from PVM to MPI, Part I: The Unify System," *Proceedings of the Fifth Symposium on the Frontiers of Massively Parallel Computation*, February 6-9, 1995.

Skjellum, A., A.P. Leung, S.G. Smith, R.D. Falgout, C.H. Still, and C.H. Baldwin, "The Multicomputer Toolbox--First Generation Scalable Libraries," *Proceedings of the Hawaii International Conference on Systems Sciences (HICSS-27),* Maui, Hawaii, January 1994, pp. 644-654.

Non-Refereed Conference Papers

Jothi P. Neelamegam, Srigurunath Chakravarthi, Manoj Apte, Anthony Skjellum: PromisQoS: An Architecture for Delivering QoS to High-Performance Applications on Myrinet Clusters. LCN 2003: 510-517.

Skjellum, Anthony, Vijay Velusamy, Changzheng Rao, and Boris Protopopov, "Programmable NICs: What They Mean for Parallel Middleware (And Are They Here to Stay?)," *Proceedings of the 6th Gigabit Network Technology Workshop,* Washington University, St. Louis, MO, June 18, 2002.

Batchu, R., J.P. Neelamegam, Z. Cui, M. Beddhu, A. Skjellum, Y. Dandass, and M. Apte, "MPI/FT (TM): Architecture and Taxonomies for Fault-Tolerant, Message-Passing Middleware for Performance-Portable Parallel Computing," *DSM2001*, Brisbane, Australia, May 2001.

Skjellum, A., "High Performance MPI," *Proceedings of PDPTA98,* July 1998.

Kanevsky, A., A. Skjellum, and J. Watts, "Standardization of Communication Middleware for High-Performance Real-Time Systems," *Proceedings on Middleware for Distributed Real-Time Systems and Services,* San Francisco, December 1997, pp. 206-223.

Balducci, M., A. Choudary, A. Ganapathiraju, J. Hamaker, J. Picone, and A. Skjellum, "Benchmarking of Serial and Parallel FFT Algorithms," *Proceedings of IEEE Southeastcon,* Blacksburg, Virginia, April 1997, pp. 328-330.

Kanevsky, A., A. Skjellum, Z. Cui, and J. Li, "Design and Implementation of a Real-Time Message-Passing Interface," *Proceedings of International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA '97), Vol. 1,* July 1997, pp. 334-345.

Kanevsky, A., and A. Skjellum, "The Real-Time MPI Specification and its Prototype," *Proceedings of the 1st International Workshop on Embedded HPC Systems and Applications, 11th International Parallel Processing Symposium,* April 1997.

Brightwell, R., and A. Skjellum, "MPICH on the T3D: A Case Study of High-Performance Message Passing," *Proceedings of the MPI Developers Conference,* University of Notre Dame, July 1996, pp. 2-9.

Skjellum, A., B. Protopopov, and L. S. Hebert, "A Thread Taxonomy for MPI," *Proceedings of MPI Developers Conference,* July 1996, pp. 50-57.

McMahon, T., and A. Skjellum, "eMPI/eMPICH: Embedding MPI," *Proceedings of MPI Developers Conference,* July 1996, pp. 180-184.

Skjellum, A., and P.V. Bangalore, "Driving Issues in Scalable Libraries," *Proceedings of SIAM Seventh Conference on Parallel Processing for Scientific Computing,* February 15, 1995.

Bangalore, P.V., N. Doss, and A. Skjellum, "MPI++: Issues and Features," *Proceedings of OONSKI '94,* 1994.

Skjellum, A., N.E. Doss, K. Viswanathan, A. Chowdappa, and P.V. Bangalore, "Extending the Message Passing Interface (MPI)," *Proceedings of the Scalable Libraries Conference II (SPLC94),* 1994, pp. 106-118.

Skjellum, A., and B.K. Grant, "Message Passing in the 1990's: Performance, Safety, Correctness," *Proceedings of Supercomputing 1993,* 1993, pp. 767-768 (invited presentation).

Skjellum, A., "MPI: A Message Passing Interface," *Proceedings of Supercomputing 1993,* 1993, pp. 878-883.

Skjellum, A., "Document for a Standard Message-Passing Interface," *Proceedings of the Message Passing Interface Forum,* University of Tennessee, November 1993 (specifically, Chapter 5).

Skjellum, A., N.E. Doss, and P.V. Bangalore, "Writing Libraries in MPI," *Proceedings of the Scalable Parallel Libraries Conference (SPLC),* October 1993, pp. 166-173.

Skjellum, A., "The Multicomputer Toolbox: Current and Future Directions," *Proceedings of the Scalable Parallel Libraries Conference (SPLC),* October 1993, pp. 94-103.

Smith, S.G., R.D. Falgout, C.H. Still, and A. Skjellum, "High-Level Message-Passing Constructs for Zipcode 1.0: Design and Implementation," *Proceedings of the Scalable Parallel Libraries Conference (SPLC),* October 1993, pp. 150-159.

Bangalore, P.V., A. Skjellum, C.H. Baldwin, and S.G. Smith, "Dense and Iterative Concurrent Linear Algebra in the Multicomputer Toolbox," *Proceedings of the Scalable Parallel Libraries Conference (SPLC),* October 199*3,* pp. 132-141.

Anupindi, K., A. Skjellum, P. Coddington, and G.C. Fox, "Parallel Differential-Algebraic Equation Solvers for Power System Transient Stability Analysis," *Proceedings of the Scalable Parallel Libraries Conference (SPLC),* October 1993, pp. 240-244.

Leung, A.P., A. Skjellum, and G.C. Fox, "Concurrent DASSL: A Second-Generation DAE Solver Library," *Proceedings of the Scalable Parallel Libraries Conference (SPLC),* October 1993, pp. 204-210.

Briley, W.R., D.G. Reese, A. Skjellum, and L. Turcotte, "NHPDCC--The National High Performance Distributed Computing Consortium," *Proceedings of the Scalable Parallel Libraries Conference (SPLC),* October 1993, pp. 2-9.

Skjellum, A., "Scalable Libraries in a Heterogeneous Environment," *Proceedings of the Second High Performance Distributed Computing Conference (HPDC2),* July 1993, pp. 13-20 (invited paper).

Falgout, Robert D., Anthony Skjellum, Steven G. Smith, and Charles H. Still, "The Multicomputer Toolbox Approach to Concurrent BLAS and LACS," *Proceedings of the Scalable High Performance Computing Conference (SHPCC),* April 1992, pp. 121-128.

Skjellum, Anthony, and Charles H. Still, "Zipcode and the Reactive Kernel for the Caltech Intel Delta Prototype and nCUBE/2," *Proceedings of the Sixth Distributed Memory Computing Conference (DMCC6),* April 1991.

Skjellum, A., and Alvin P. Leung, "Zipcode: A Portable Multicomputer Communications Library atop the Reactive Kernel," *Proceedings of the Fifth Distributed Memory Computing Conference,* 1990. [60 citations per Google Scholar as of January, 2011].

Skjellum, A., and Alvin P. Leung, "LU Factorization of Sparse, Unsymmetric Jacobian Matrices on Multicomputers: Experience, Strategies, Performance," *Proceedings of the Fifth Distributed Memory Computing Conference,* 1990.

Skjellum, A., and M. Morari, "Concurrent DASSL Applied to Dynamic Distillation Column Simulation," *Proceedings of the Fifth Distributed Memory Computing Conference,* 1990.

Skjellum, A., M. Morari, S. Mattisson, and L. Peterson, "Concurrent DASSL: Structure, Application, and Performance," *Proceedings of the Fourth Conf. on Hypercubes, Concurrent Computers and Applications (HCCA4),* Golden Gate Enterprises, 1989, pp. 1321-1328.

Skjellum, A., M. Morari, S. Mattisson, and L. Peterson, "Highly Concurrent Dynamic Simulation in Chemical Engineering II," *Proceedings of the AIChE Annual Meeting,* San Francisco, November 1989.

Skjellum, A., M. Morari, S. Mattisson, and L. Peterson, "Highly Concurrent Dynamic Simulation in Chemical Engineering: Issues, Methodologies, Model Problems, Progress," *Proceedings of the AIChE Annual Meeting,* Washington, DC, November 1988.

Skjellum, A., M. Morari, and S. Mattisson, "Concurrent Dynamic Simulation of Distillation Columns via Waveform Relaxation," *Proceedings of the Second International Conference on Vector and Parallel Computing,* Norway, June 1988.

Skjellum, A., M. Morari, and S. Mattisson, "Waveform Relaxation for Concurrent Dynamic Simulation of Distillation Columns," *Proceedings of the Third Conference on Hypercube Concurrent Computers and Applications,* Pasadena, January 1988, pp. 1062-1071.

Smith, R.S., J. Doyle, M. Morari, and A. Skjellum, "A Case Study Using Laboratory Process Control Problems," *Proceedings of the IFAC 10th World Congress on Automatic Control, Vol. 8,* Munich, July 1987.

Lewin, D.R., R.E. Heersink, A. Skjellum, D.L. Laughlin, and D.E. Rivera, "Robex: Robust Control Synthesis via Expert System," *Proceedings of the IFAC 10th World Congress on Automatic Control,* Munich, July 1987.

Morari, M., R.E. Heersink, and A. Skjellum, "Development of an Expert System for Computer-Aided Instruction in Process Control," *Proceedings of IBM AIS University AEP Conference,* 1986.

Skjellum, A., "Integration of Computational Elements into a Problem-Oriented Chemical Engineering Course," *Proceedings of IBM AIS University AEP Conference,* 1985.

Books

Gropp, William, Ewing Lusk, and Anthony Skjellum, *Using MPI: Portable Parallel Programming with the Message Passing Interface,* MIT Press, 2nd Edition, November 1999.

Gropp, William, Ewing Lusk, and Anthony Skjellum, *Using MPI: Portable Parallel Programming with the Message Passing Interface,* MIT Press, October 1994.
[IMPACT: 3,007 citations on Google Scholar as of January, 2011. This reflects both editions.]

Chapters of Books

Skjellum, A., "Parallel Processing," *Lecture Notes in Computer Science Vol. 1/1123,* Spring Verlag, 1996, pp. 128-135.

Bangalore, P.V., N.E. Doss, Ziyang Lu, and A. Skjellum, "Explicit Parallel Programming in C++ based on the Message-Passing Interface (MPI)," Chapter in *Parallel Programming Using C++*, G. V. Wilson, Ed., MIT Press, 1995.

Chapter 16 and parts of chapter 9 of *Parallel Computing Works!* by Fox, Messina, and Smith, Morgan-Kaufmann, April 1994.

Skjellum, Anthony, Steven G. Smith, Charles H. Still, Alvin P. Leung, and Manfred Morari, "The Zipcode Message-Passing System," *Parallel Computing Works,* Geoffrey C. Fox, editor, 1993 (also as Lawrence Livermore National Laboratory Technical Report No. UCRL-JC-112022, 1992.)

Selected Volumes Edited

James H. Graham, Anthony Skjellum: 22nd International Conference on Parallel and Distributed Computing and Communication Systems, PDCCS 2009, September 24-26, 2009, Marriott Louisville Downtown, Louisville, Kentucky, USA ISCA 2009.

Selected Reports

Skjellum, A., (co-chair and co-editor) "DRAFT Document for the Real-time Message Passing Interface (MPI/RT) Standard," Real-Time Message Passing Interface (MPI/RT) Forum, Revision of 1/16/98.

Dimitrov, R., B. Protopopov, and A. Skjellum, "How Data Transfer Modes and Synchronization Schemes Affect the Performance of a Communication System Based on Myrinet," Technical Report revision of 12/97, 1997.

Henley, G., N. Doss, and A. Skjellum, "BDT: A Thread Library for the Myricom LANai 4.x Communications Processor," Technical Report No. MSSU-EIRS-ERC-97-2, NSF Engineering Research Center, Mississippi State University, February 1997.

Henley, G., N. Doss, T. McMahon, and A. Skjellum, "BDM: A Multiprotocol Myrinet Control Program and Host Application Programmer Interface," Technical Report No. MSSU-EIRS-ERC-97-3, NSF Engineering Research Center, February 1997.

Doss, N., G. Henley, and A. Skjellum, "BDMD: A Debugger for Myrinet Control Programs," Technical Report No. MSSU-EIRS-ERC-97-4, NSF Engineering Research Center, February 1997.

Skjellum, A., S.G. Smith, C.H. Still, and R.D. Falgout, "The Multicomputer Toolbox," *Laboratory Directed Research and Development*, Technical Report No. UCRL-53689-92, Lawrence Livermore National Laboratory, University of California, February 1993.

Grant, Brian K., and Anthony Skjellum, "The PVM Systems: An In-Depth Analysis and Documenting Study: Concise Edition," Lawrence Livermore National Laboratory Technical Report NO. UCRL-JC-112016, August 1992.

Skjellum, Anthony, and Chuck Baldwin, "The Multicomputer Toolbox: Scalable Parallel Libraries for Large-Scale Concurrent Applications," Technical Report No. UCRL-JC-109251, Lawrence Livermore National Laboratory, University of California, December 1991.

Skjellum, A., and M. Morari, "Zipcode: A Portable Multicomputer Communications Library for High-Performance Computing: Practice and Experience," Technical Report, Lawrence Livermore National Laboratory, University of California, March 1991.

Crawford, G. III, Y. Dandass, and A. Skjellum, "The JMPI Commercial Message Passing Environment and Specification: Requirements, Design, Motivations, Strategies, and Target Users."

Selected Presentations

Workshops

Skjellum, A., R. Batchu, Y. Dandass, and M. Beddhu, "MPI/FT: A Model-Based Approach for Low-Overhead Fault-Tolerance," 1st Sandia/CSRI Fault Tolerance Workshop, Albuquerque, NM, June 10, 2002.

Skjellum, A., Hebert, S., A. Kanevsky, and Z. Cui, "MPIDC99 Tutorial on MPI/RT," Third MPI Developers and Users Conference, Atlanta, March 1999 (half-day tutorial).

Skjellum, A., and P. Bangalore, "MPIDC99 Tutorial on MPI-2," Third MPI Developers and Users Conference, Atlanta, March 1999, (half-day tutorial).

Skjellum, A., and P. Bangalore, "SIAM Tutorial on MPI-2," SIAM 9th Conference On Parallel Processing for Scientific Computing, San Antonio, March 1999, (half-day tutorial).

Skjellum, A., and P. Bangalore, "IPPS Tutorial on High Performance Computing," IPPS'97, Geneva, Switzerland, April 1997 (half-day tutorial).

Skjellum, A., and P. Bangalore, "IPPS Tutorial on MPI," IPPS'97, Geneva, Switzerland, April 1997 (half-day tutorial).

Skjellum, A., "Design and Development of Real-Time Message Passing Interface (MPI/RT) Standard," High Performance Embedded Computing Workshop, September 1997.

Skjellum, A., "A Second Talk about MPI," SCRI Cluster Workshop '93, Florida State University, December 8, 1993.

Skjellum, A., "Writing Parallel Libraries with MPI," AMPI: A Message Passing Interface Mini-Symposium, Supercomputing 1993, Portland, OR, November 19, 1993.

Skjellum, A., "Message Passing Systems: Portability, Capability, Performance, Standards," The First CRPC Workshop on Standards for Message Passing in a Distributed Memory Environment, Williamsburg, VA, April 1992 (invited presentation).

"The Reactive Kernel and Cosmic Environment: Native and Emulated Systems for Medium-Grain Multicomputers and Workstation Networks." The First CRPC Workshop on Standards for Message Passing in a Distributed Memory Environment, Williamsburg, VA, April, 1992 (invited presentation).

Invited Lectures

"MPI 4: An Exascale Message Passing Strawman Standard," Sandia National Laboratories, April, 2011.

"Gibraltar GPU RAID", EMC Technical Talk, co-presented with Matthew Curry, November 8, 2010, Cambridge, Mass.

"MPI-3: Evolution, Revolution, or Status Quo," Sandia National Laboratories, June 12, 2002.

"Efficient Implementations of MPI," Lawrence Livermore National Laboratory, February 16, 1995.

"The National High Performance Distributed Computing Consortium," Lawrence Livermore National Laboratory, October 21, 1993.

"MPI: An Effort to Standardize Mulitcomputer Message Passing," Los Alamos National Laboratory, CNLS Seminar, July 6, 1993 (also presented at NASA Ames, August 18, 1993; and Lawrence Livermore National Laboratory, August 19, 1993).

"Building Parallel Libraries and Applications in the MPP Environment," Lawrence Livermore National Laboratory, August 17, 1993.

"The Multicomputer Toolbox: First-and Second-Generation Scalable Libraries and Algorithms Research," Sandia National Laboratories, Massively Parallel Computing Research Laboratory, June 2, 1993 (also presented at Argonne National Laboratories, September 7, 1993).

University Service

At UAB

Chair, University-wide Committee, "Research Capacity Building Committee," 2009-present.

At Mississippi State

Computer Science Department/Research Center Liaison Committee, 2001-02
- Chairman, 2001-02

Computer Science Faculty Search Committee, 1997-98, 1999-00
Computer Science Facilities Committee, 1998-02
- Chairman, 1998-99, 2000-01

Computer Science *Ad Hoc* Committee on Graduate Student Concerns, 2001-02
Computer Science Affiliation Agreements Committee, 1999-00
Computer Science *Ad Hoc* Committee on Target Schools, 2000-01
Computer Science Strategic Planning Committee, 2000-01

Students Advised

Ph.D. students advised, in progress:

Brad Wardman, Ying Zhang, Shane (Matthew) Farmer, Hadia Ahmed, Zhiwei Sun, Jia Ma, Amin Hassani

Ph.D. students advised, completed dissertations & graduated:

At UAB:

Matthew Curry (2010), Vetria Byrd (2010), Zhijie Guan (2005)

At Mississippi State:

Rossen Dimitrov, Manoj Apte, Purushotham V. Bangalore, Boris V. Protopopov, Yoginder Dandass

Master's students advised

At UAB:

Evana Rahaman, MS 2011
Saoni Mukherjee, MS 2011
Yin Liu, MS 2005

At Mississippi State:

Wenhao Wu, MS 2003
Vijay Velusamy, MS, 2003
Diane Mosser-Wooley, MS 2002
Kumaran Rajaram, MS 2002
Jothi Padmanabhan Neelamegam, MS 2001
Xinyan Zan, "A Real-Time Message Layer Over Myrinet Networks," August 2000.
Srigurunath "Ecap" Chakravarthi, "Predictability and Performance Factors Influencing the Decision of Real-Time Messaging Layers," May 2000.
Matthew Gleeson, December 2000
Lubomir Birov, " C++ As A High Performance Language for Vector, Signal, and Image Processing Libraries," August 1999.
Zhenqian Cui, "A Study of Quality of Service Communication for High-Speed Packet-Switching Computer Sub-Networks," May 1999
Ajitha Choudary, May 1998
Rossen Dimitrov, "A Windows NT Kernel-Mode Device Driver for PCI Myrinet LANai 4.x Interface Adapters," May 1997.
Jin Li, May 1996
Ziyang Lu, PhD (MS 1996)
Mark Rauschkolb, May 1995
Purushotham V. Bangalore, "The Data-Distribution-Independent Approach to Scalable Parallel Libraries," May 1995
Chandrashekar Laveti, 1995
Ron Brightwell, 1995

Nisreen Ammari, graduated 2003
Raghu Angadi, graduated 2002
Srihari V. Angaluri, graduated 2004.
Rajanikanth Batchu, graduated 2003
Mangayarkarasi Dhandapani, graduated 2003
Shanthisowjownya Kottakotta, graduate 2003
Ranjith Balachandran, current
Changzheng Rao, graduate 2003
Ravi Vadapalli, graduated 2002

Courses Taught

At UAB
CS 307 Object-oriented Perl Programming
CS 420/520 Software Engineering
CS 436/636 Computer Security
CS 620/630 Bionformatics I/II (Coordinator)
CS 499 Senior Capstone
CS 591/691 Virtualization

At Mississippi State University
CS 9133 Parallel Scientific Computing
CS 8733 Advanced Systems Programming
CS 4992/6992 Advanced Programming Using C++
CS 3183 Systems Programming
CS 4812/6812 Computer Systems Laboratory I
CS 4743/6743 Operating Systems II
CS 4192/6192 Computer Systems Laboratory II
CS 4163/6163 Design of Parallel Algorithms
CS 4153/6153 Data Communications and Networking
CS 1213 Fortran for Scientists and Engineers

Selected Administrative Achievements as Chair of Computer and Information Sciences

1) Obtained ABET Accreditation for the Bachelor of Science Program (effective Oct. 2005).
2) Recruited two women assistant professors, one of whom is now tenured; the second is Hispanic.
3) Graduated a PhD student who is an African American Woman in 2010 (Dr. Vetria Byrd).
4) Hired at total of three professors during past seven years. Total faculty size is currently nine FTEs.
5) Remodeled research labs and infrastructure, including two MRI grants so far enabling HPC research.
6) Oversaw the regrowth in undergraduate population, and growth in PhD student graduations in the past seven years
7) Obtained approval for the Master of Science in Computer Forensics and Security Management, program will commence Fall 2011.
8) Approval pending for an Interdisciplinary Center for Forensics at UAB, approval anticipated in April, 2011.
9) Introduced several types of continuous improvement processes for undergraduate and graduate education
10) Introduced support for "Adult Returning Students" at BS, MS, and PhD levels.
11) Designed and Introduced the Senior Capstone course.

12) Introduced requirement for public speaking class for all computer science majors; Introduced public speaking requirements into the senior-level software engineering class as well as senior capstone.
13) Added ethics components to the software engineering and senior capstone classes.
14) Grew research space in the department significantly with a new laboratory for Cybercrime and Information Assurance Research, February 2010.