

# Daniel A. Reed

## Education

B.S. ( <i>summa cum laude</i> )	Computer Science	Harding College	August 1975-May 1976
M.S.	Computer Science	Missouri University of S&T	December 1978
Ph.D.	Computer Science	Purdue University	May 1980
		Purdue University	May 1983

**Security Clearance:** Available upon request

## Academic Positions

- Professor, University of Utah, 2018-present
  - Joint appointments in Computer Science and Electrical & Computer Engineering
- Professor, University of Iowa, 2012-2018
  - Joint appointments in Computer Science, Electrical and Computing Engineering & Medicine
  - *Campus-level endowed chair*: University Computational Science and Bioinformatics Chair
- Chancellor's Eminent Professor, University of North Carolina at Chapel Hill, 2004-2007
  - *Campus-level endowed "super chair," one of three on campus*
- Senior Research Scientist, National Center for Supercomputing Applications, 1995-2000
- Edward William and Jane Marr Gutgsell Professor, University of Illinois, 2000-2003
  - *Campus-level endowed chair, one of ten on campus*
- Professor, University of Illinois at Urbana-Champaign, August 1991-2003
- Associate Professor, University of Illinois at Urbana-Champaign, August 1988-August 1991
- Assistant Professor, University of Illinois at Urbana-Champaign, August 1984-August 1988
- Assistant Professor, University of North Carolina at Chapel Hill, August 1983-July 1984
- Post-doctoral Research Associate, Purdue University, May 1983-August 1983

## Leadership Experience

### University of Utah (2018-present)

Senior Vice President for Academic Affairs

### University of Iowa (2012-2018)

Vice President for Research and Economic Development, 2012-2017

- Responsible for campus research oversight, technology transfer and economic development, and campus research, scholarship and policy centers
  - Led campus ideation/strategy process to diversify research and fund multidisciplinary projects, all while campus faced state funding cuts and faculty losses
    - NNMI partnership (advanced manufacturing) with Illinois
    - New informatics initiative
  - Restructured economic development, engaged state businesses, and accelerated faculty entrepreneurship
    - Doubled number of patent applications
    - SBIR/STTR success rate 2X the national average
  - Built prototyping facility in collaboration with the state for biomedical devices and startups
  - Launched mobile museum to showcase research to communities across Iowa
    - More than 100,000 visitors to date
  - Engaged Deans in strategic planning and community building
  - Expanded humanities and creative arts partnerships
    - *Creative Matters* lecture series and *Creative Matches* science/art partnerships
  - Partnered with the Provost to launch campus initiatives
  - Partnered with the Big Ten Academic Alliance on economic impact of research
    - UMETRICS is now IRIS, available to AAU and APLU institutions
  - Participated in national science and technology policy and global Internet governance

- Engaged state businesses and state policy leaders on innovation strategy
- Built innovation and prototyping center for community and faculty startups
- Direct report to the President and member of the President's Cabinet

### **Microsoft (2007-2012)**

Corporate Vice President (corporate officer), Microsoft, 2009-2012

- Reported to the Head of Microsoft Research and later to the Chief Research and Strategy Officer, who reported to the CEO
- Led an advanced prototyping team on extreme computing that developed key technologies for Microsoft products
- Led spectrum policy discussions
- Built international research partnerships on cloud computing (US, EU, Japan)
- Led Microsoft's global technology policy team that engaged heads of state, government ministers, corporate leaders, and other NGO leadership, targeting strategic technical, legal and political issues.
- Participated in World Economic Forum events, Asia-Pacific and B20 global economic summits

Director, Scalable and Multicore Computing, Microsoft, 2007-2009

- Built and led research and prototyping team to address strategic business problems in cloud and parallel computing, reporting to the Head of Microsoft Research

### **University of North Carolina (2004-2007)**

**U.S. President's Information Technology Advisory Committee (PITAC) (2003-2005)**

**U.S. President's Council of Science and Technology Advisors (PCAST) (2006-2008)**

Director, Renaissance Computing Institute, 2004-2007

- Founded and built multidisciplinary institute that spanned UNC, Duke and NC State, targeting disaster response, post-genomic biology, arts and humanities
- Spearheaded statewide research, outreach and economic development activities
- Built organization to ~100 staff with ~\$12M/year state appropriation and campus support, plus federal and private support

Vice-Chancellor for Information Technology, 2004-2007

- Merged administrative and academic IT organizations, recruited new senior leadership, built new facilities
- Launched campus strategic IT plan and administrative enterprise resource planning (ERP)
  - ERP process replaced 30 year old, antiquated IT system
- ~600 staff and \$60M annual budget
- Direct report to the President and member of the President's Cabinet

Senior Advisor for Strategy and Innovation, 2007

- Chancellor's advisor on 21<sup>st</sup> century research university directions

### **University of Illinois (1996-2001)**

Head, Department of Computer Science, 1996-2001

- ~2000 students, 40 faculty and 100 staff, top 5 ranked department in the U.S.
- Helped secure \$30M donation (Thomas Siebel) for new building as part of a new, \$100M IT quadrangle that also included a building for NCSA
- Negotiated departmental faculty growth to >60 positions
- Launched international distance education program with M.S. degrees

Director, National Computational Science Alliance, 2000-2003

- ~50 institution national partnership, funded by NSF as part of Partnerships for Advanced Cyberinfrastructure (PACI)

Director, National Center for Supercomputing Applications (NCSA), 2000-2003

- ~250 staff and \$80M annual budget with direct state support
- Fortune 500 corporate partnerships for industrial competitiveness
- Strategic campus partnerships, working in collaboration with Chancellor, Provost and Deans

Co-PI and Chief Architect, NSF Extensible Terascale Facility TeraGrid, 2001-2003

- **\$88M federal initiative** with corporate partners IBM, Intel and Qwest and academic partners University of California at San Diego, California Institute of Technology and University of Chicago/Argonne National Laboratory

#### **Other Positions**

- Visiting Scholar, World Bank Indonesian Second University Development Project, 1990, Jakarta
- Visiting Scientist, IBM T. J. Watson Research Center, July 1990-December 1990

#### **University of Iowa Service**

- Strategy Implementation Team (strategic planning)
- Iowa Innovation Council (state economic development)
- President's Cabinet
- College of Arts and Sciences Humanities Advisory Board, co-convener
- Iowa Business Council (major Iowa business leaders)
- State of Iowa STEM/Computer Science initiatives
- University of Iowa Belin-Blank Center, Advisory Board
- College of Education, Advisory Board (*ex officio*)
- University of Iowa Research Foundation, Vice-chair
- University of Iowa Research Park, Board Member
- Iowa City Area Development Group, Board of Directors

#### **Microsoft Professional Service**

- TechAmerica Cloud Commission, Commercial Co-Chair, 2011
- Computing in the Core (now code.org), Executive Committee, 2011-2012
- U.S. Federal Communication Commission, Technical Advisory Group, 2011-2012
- National Archives and Records Administration, ACERA, 2005-2011
- National Academies, Board on Research Data and Information, 2009-2011
- National Academies, Board on Global Science and Technology, 2010-2014
  - Chair, Committee on Global Approaches to Advanced Computing
- Broad Institute, GenomeSpace, Scientific Advisory Board, 2008-2010
- B20 IT thrust, co-chair, 2011-2012

#### **University of North Carolina Service**

- Chancellor's Cabinet, 2004-2007
- IT Strategic Planning Committee, chair, 2005-2007
- MCNC Advisory Council, 2005-2007
- Southeastern Universities Research Association (SURA) High Performance Computing and Grids Planning Group, 2004-2007
- Bioinformatics Planning Committee, co-chair, 2004-2007
- NIH Roadmap Planning Committee, 2004-2007

#### **University of Illinois Service**

- President's Distinguished Speaker, 2000-2003
- Campus Advisory Committee, National Center for Supercomputing Applications, 1998-2000
- Campus Information Technology Planning Committee, 1999

- Executive Committee, Motorola Telecommunications Center, 1997-2003
- Executive Committee, DOE ASCI Center for Simulation of Advanced Rockets, 1997-2000
- Dean of Engineering's Five Year Review Committee, 1999
- College of Engineering Promotion and Tenure Committee, 1998-2000
- Committee on the Future of Information Technology, 2000

### Professional Memberships

- Member, Association for Computing Machinery (ACM), 1978-present, Fellow, 2003-present
- Member, IEEE, 1980-present, Fellow, 2004-present
- Member, AAAS, 1986-present, Fellow, 2007-present
- International Federation for Information Processing, Working Group WG10.3, 1993-present

### University and National Awards

- Honorary Doctorate, Dakota State University, 2017
- Distinguished Service Award, University of Illinois, 2014
- Distinguished Alumnus Award, Missouri University of Science and Technology, 2014
- Honorary Professional Degree, Missouri University of Science and Technology, 2010
- Distinguished Alumnus, School of Science, Purdue University, 2008
- Best Paper Award, Large-Scale System and Application Performance Workshop, 2009
- HPCWire, Community Recognition Award, 2007
- Best Technical Paper Award, *Supercomputing 2004*
  
- Xerox Senior Research Award, University of Illinois at Urbana-Champaign, 1991
- University Scholar, University of Illinois at Urbana-Champaign, 1989
- Beckman Associate, Center for Advanced Study, University of Illinois, 1989-1990
- University Scholar, University of Illinois at Urbana-Champaign, 1989
- National Science Foundation, Presidential Young Investigator Award, 1987-1992
- ACM SIGMETRICS Best Award Paper, 1987
- IBM Faculty Development Award, 1984-1985

### Major Academic Research Collaborations

- NSF Midwest Big Data Hub (*steering committee*), 2016-
- High-performance computing and big data fusion, 2014-present (collaboration planning)
- LEAD and VGrADS Large NSF ITR Awards, 2003-2007
- National Center for Advanced Secure Systems Research (NCASSR), 2003
- NSF TeraGrid, Executive Committee and Chief Architect, 2001-2003
- DOE Lattice Gauge Theory Consortium, 2001-2007
- NSF National Computational Science Alliance, Executive Committee and Director, 1997-2003
- Los Alamos Computer Science Institute, Executive Committee, 1999-2006
- DOE ASCI/ASAP Center for Simulation of Advanced Rockets, Steering Committee, 1998-2000
- DOE ASCI/ASAP Center for Simulation of Dynamic Response of Materials, 1998-2002
- Parallel I/O Grand Challenge Group (Caltech), 1993-1998
- Scalable I/O Initiative, Executive Committee, 1995-1998
- NSF STC Center for Research in Parallel Computation, Affiliate, 1997-200

### Recent Invited Lectures

I speak regularly to diverse audiences (corporate, government, academic and NGOs) on topics spanning research and scholarship, diversity and inclusion, innovation and creativity, and public policy. Recent, representative technical examples from outside Iowa and the University of Iowa include:

- "Convergence Lessons: Big Data and HPC," EU Post-H2020 Vision for HPC Workshop, June 2018
- "The Convergence of Academic and Research Collaboration," *Internet2 Keynote*, May 2018
- "Crossing the Intellectual Desert: Building and Sustaining Multidisciplinary Teams," *Cyberinfrastructure Workforce*, August 2017

- “Data Writ Large: Technology, Culture and Collision,” *International Association for Social Science Information Services and Technology*, May 2017
- “The Future of Computing,” Missouri University of Science and Technology, October 2016
- “Big Data Meets HPC,” *Korean Supercomputing Conference*, October 2015
- “The Future of Computing Mediated Research and Innovation,” *NSF CISE Distinguished Lecture*, March 2015
- “Extreme Scale Lessons,” *SIA/NSF/SRC Workshop on Rebooting the IT Revolution*, March 2015
- Addressing Computing Diversity: It’s Long Past Time to Get Real,” *Richard Tapia Celebration of Diversity in Computing*, February 2015
- “Big Data Meets HPC,” *Big Data and Extreme Scale Computing (BDEC)*, Barcelona, Spain, January 2015
- “Big Data and Big Compute: Getting Better Acquainted,” *International Workshop on Data-Intensive Scalable Computing Systems*, (keynote) November 2014
- “Beowulf Clusters: From Research Curiosity to Exascale,” *20 Years of Beowulf*, October 2014
- “Technical Computing: Past, Present and Future,” *University of Central Florida*, (invited lecture) February 2014
- “Data Centers, Cloud and PC Optimization,” Building Energy Efficient HPC: 4<sup>th</sup> Annual Energy Efficient HPC WG Workshop, November 2013
- “Clusters, Grids and Clouds: A Look from Both Sides,” *13th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing*, (invited keynote) Delft, Netherlands, May 2013
- “Clouds from Both Sides Now,” *DataCloud 2012*, (invited keynote) November 2012
- “Cloud Computing: Economic and Regulatory Implications”, invited panel, *University of Pennsylvania Law School*, Philadelphia, February 2012
- “Technology Future Shock: Society, Policy and Innovation in the Digital World,” *University of California at Berkeley*, invited lecture, March 2012
- “Data: A Common Challenge,” *International Conference on Research Infrastructure*, Copenhagen, (plenary panel discussion), March 2012
- “Future Shock Now,” *Digital Broadcast World*, (opening keynote), Rome, March 2012
- “EU 2050: Europe’s Tech Revolution,” debate with the Professor Anne Glover, Chief Science Advisor to the European Union President, Brussels, March 2012
- “Technology Policy Roundtable – Shaping Our Future,” *Chinese Academy of Science*, (invited lecture), Beijing, April 2012
- “Technology Future Shock: Society, Policy and Innovation in the Digital World,” *Global Internet Economy (GIE) Symposium*, (invited lecture), Keio University, Tokyo, April 2012
- “Enabling Global Innovation,” *United Nations Commission on Science and Technology for Development*, (plenary panel), Geneva, May 2012
- “Technical Computing: The Challenge of Scale,” *Institute for Information Science, Academia Sinica*, Distinguished Lecture, May 2012
- “HPC 2.0: The Challenge of Scale,” Distinguished Lecture, Institute for Data and High-Performance Computing, *Georgia Institute of Technology*, May 2012
- GridAsia, 2007 (keynote)
- Sigmetrics, 2006 (keynote)
- MASCOSTS, 2006 (keynote)
- *Symposium on High-Performance Distributed Computing*, 2005 (keynote)
- *Supercomputing 2004, State of the Field* (keynote)
- University of Texas at Austin, 2003 (*distinguished lecture*)
- MASCOTS, 2006, keynote
- *Sigmetrics Conference on Measurement and Modeling of Computer Systems*, 2006, keynote
- *GridAsia*, 2007, keynote

#### **Recent Public and Professional Service**

- Department of Energy, Argonne National Laboratory Scientific Advisory Committee, 2018-
- Department of Energy, Advanced Scientific Computing Advisory Committee, Chair, 2016-

- NSF National Center for Optical-Infrared Astronomy (NCOA) Management Oversight Council, 2018-
- National Renewal Energy Laboratory Computational Science and Energy Analysis TRP, 2018-
- University of Chicago Array of Things Project, Scientific Advisory Committee, chair, 2018-
- U.S. Council on Competitiveness, 2013-
  - Technology Strategy and Leadership Roundtable, Member
  - Advanced Computing Roundtable, Member
- NSF Midwest Big Data Hub, Steering Committee Chair, 2016-2018
- Coalition for Academic Scientific Computation (CASC), Advisory Committee, 2017-
- Indiana University CREST Advisory Board, Chair, 2017-
- AAU-APLU Taskforce on Data Preservation, 2017
- Institute for Research and Innovation and Science (IRIS), Board of Directors, 2017-
- National Academies Army Research Laboratory Technical Assessment Board (TAB), 2017-
  - Computer Science review team, chair, 2017-
- IEEE John von Neumann Medal Committee, 2017-2018
- Multidisciplinary Assessment Committee, Canada Foundation for Innovation, 2017
- IDC Technical Computing Online Advisory Panel, 2017-
- Large Synoptic Survey Telescope (LSST) review team, 2016-2017
- Department of Energy Exascale Computing Program review team, 2016
- National Academies, Committee on Future Directions for NSF Advanced Computing Infrastructure to Support US Science in 2017-2020, 2014-2016
- Array of Things Consortium, External Advisory Committee, 2015-
- Midfin Systems (IT startup led by members of my former Microsoft team), Advisory Board, 2014-
- Center for Minorities and People with Disabilities in Information Technology, Board of Advisors, 2011-present
- Council on Research Policy and Graduate Education, Executive Committee, APLU, 2014-2017
- Department of Energy, Advanced Scientific Computing Advisory Committee (ASCAC), 2014-
  - Chair, subcommittee review on exascale computing
  - *Committee chair*, 2015-
- National Academies, Panel on Review of the Information Technology Laboratory at the National Institute of Standards and Technology, 2015
- Council on Competitiveness, HPC Advisory Committee, 2004-2007, 2013-
- Department of Energy, Secretary of Energy Advisory Committee HPC Taskforce, 2013-2014
- SC14, Emerging Technologies Committee, 2013-2014
- ICANN Generic Names Supporting Organization (GNSO) Council, 2013-2015
- SC13, Awards Chair, 2012-2013
- Texas Advanced Computing Center, Strategic Advisory Board, 2013-2017
- Department of Energy Systems Biology Knowledgebase (KBase) project, Scientific Advisory Committee, 2013-2015
- Department of Energy Exascale Computing Program, advisor, 2012-2013
- NIH Biomedical Computing Research Centers Advisory Committee, 2012-2014
- B20 ICT Innovation Working Group, co-chair, 2012
- International Telecommunications Union, CTO Council, 2010-2012
- IEEE Seymour Cray and Sidney Fernbach Awards Committee, Chair, 2009-2012
- TechAmerica Cloud Commission, Commercial Co-Chair, 2011
- Computing in the Core, Executive Committee, 2011-2012
- Sandia National Laboratory Extreme-Scale Computing Grand Challenge External Advisory Board, 2011-2014
- U.S. Federal Communication Commission, Technical Advisory Group, 2011-2012
- National Archives and Records Administration, ACERA, 2005-2011
- National Academies, Board on Research Data and Information, 2009-2011
- National Academies, Board on Global Science and Technology, 2010-2014
  - Chair, Committee on Global Approaches to Advanced Computing
- Broad Institute, GenomeSpace, Scientific Advisory Board, 2008-2010

- NERSC (National Energy Research Scientific Computing Center) Policy Board of the Lawrence Berkeley National Laboratory, 2001-2012, Chair, 2003-2012
- Los Alamos National Laboratory, Strategic Computing Review Committee, Chair, 2008-
- **U.S. President's Council of Science and Technology Advisors (PCAST), 2006-2008**
  - **Co-chair, committee on networking and IT research and development**
- **U.S. President's Information Technology Advisory Committee (PITAC), 2003-2005**
  - **Chair, IT and Computational Science Subcommittee, report available at [www.nitrd.gov/pitac/reports](http://www.nitrd.gov/pitac/reports)**
- National Center for Computational Sciences, Oak Ridge National Laboratory, Advisory Committee, 2006-2007
- Defense Science Board, NNSA Strategic Computing Plan Task Force, 2008
- DARPA Exascale Software Study, 2008
- NSF Alan T Waterman Award Selection Committee, 2004-2006
- DOE Tri-laboratory Nuclear Stockpile Stewardship Review, 2004-2007
- Biomedical Informatics Expert Panel, National Institute of Health's National Center for Research Resources, 2004-2007
- Army Research Laboratory Review Panel for Digitization and Communications Science, 2005-2007
- International Conference on Cluster Computing, Advisory Committee 2003-present
- Illinois VentureTECH Advisory Committee, appointed by Illinois Governor Ryan, 2000-2003
- Georgia Institute of Technology, College of Computing Advisory Board, 2000-2008
- Steering Committee, SC'XY Conference on High-Performance Computing, 2000-2003, 2007-2011
- Argonne/University of Chicago Computation Institute External Advisory Council, 2000-2005
- Co-chair, Grid Physics Network (GriPhyN) Steering Committee, 2001-present
- Advisory Committee, NSF Computer and Information Science and Engineering (CISE) Directorate, 1997-2000
  - Chair, High-Performance Computing Advisory Subcommittee, 1998-2000
- Electorate Nomination Committee of the Section on Information, Computing, and Communication, AAAS, 2001-2004
- Member-at-Large, Section on Information, Computing, and Communication, AAAS, 2002-2006
- Steering Committee, Linux Cluster Institute, 2002-2003
- Organizing Committee, Department of Homeland Security, Advanced Scientific Computing Requirements Workshop, 2003
- Board of Directors, Computing Research Association (CRA), 1998-2009
  - Chair, 2005-2009, Awards Committee (chair), 1998-1999, Government Affairs Committee 1999-present, (chair) 1999-2001, AAAS Society Representative, 2001-present
- Joint US/Russian Information Technology Exchange, Moscow, September 1999
- Chair, NSF Review Committee, National Center for Atmospheric Research (NCAR), 1999
- Academic Review Committees
  - Department of Computer Science, University of Arizona, 2007 (chair)
  - Department of Computer Science, University of Maryland, 2003
  - College of Computing, Georgia Institute of Technology, 2002
  - Department of Computer Science and Engineering, University of California at San Diego, 1999 (Chair)
  - Department of Computer Science, Virginia Polytechnic Institute and State University, 1998

- Steering Committee, Illinois Information Technology Workforce Conference, 1998
- Executive Committee, NSF National Computational Science Alliance, 1996-2003
- Organizing Committee, Department of Energy Data and Visualization Corridor Planning Meetings, 1998-1999
- Secretary/Treasurer, ACM SIGMETRICS Special Interest Group on Performance Measurement and Modeling, 1993-1995

### **U.S. Congressional Testimony**

- U.S. House of Representatives Science and Technology Committee and Subcommittees
  - July 2003, May 2004, July 2008, September 2011, May 2013
- U.S. Senate Energy Resources Subcommittee, June 2004
- U.S. Senate Commerce Committee, April 2008

### **Research Conference Program Committees**

*All major conferences in high-performance computing (typically 3-5 each year until my move to Microsoft). Selected samples shown. I now serve on selected committees that I consider of importance, prioritizing the responsibilities of my current position.*

- The Ninth International Conference on Cloud Computing, GRIDs, and Virtualization, Program Committee, 2018
- IEEE International Conference on Cloud Computing, General Co-chair, 2018
- 6th IEEE International Conference on Cloud Computing Technology and Science, Program Committee, 2014, 2015
- SC14, Emerging Technologies, 2014
- EduPar-12: Second NSF/TCPP Workshop on Parallel and Distributed Computing Education, 2012
- International Workshop on Data Intensive Computing in the Cloud, Steering Committee, 2011
- High-Performance Infrastructure for Scalable Tools, Program Committee, 2011, 2012
- Network and Parallel Computing Conference Steering Committee, 2010-present
- Cluster 'XY, Steering and Advisory Committees, 2007-present
- General Chair, ACM SIGPLAN Symposium on Principles & Practice of Parallel Programming, 2009
- SC06, Technical papers, co-chair, SC06
- Computing System Applications, 2004, 2005
- Steering Committee and Program Co-chair, IFIP International Conference on Network and Parallel Computing, 2005
- Program Committee, International Workshop on Software Engineering for High Performance Computing System Applications, 2004, 2005
- Vice-chair, Software Tools, International Conference on Parallel Processing, 2005
- Program Committee, Second European Across Grids Conference, 2004
- 17th International Conference on Parallel and Distributed Computing, 2004
- International Workshop on Software Engineering for High Performance Computing System Applications, 2004
- Vice-chair, Software, International Parallel and Distributed Processing Symposium (IPDPS), 2004
- Program Committee, IFIP International Conference on Network and Parallel Computing (NPC 2004)
- Program Committee, The European Grid Conference EGC2005, 2004
- General chair, Clusters 2002
- Program committee, Performance 2002
- Program committee, HPDC-11: The International Symposium on Grid Computing, 2002
- Program committee, Second and Third Workshops on Advanced Collaborative Environments, 2002-2003
- Technical program chair, SC02, 2000-2002
- IEEE International Symposium on Cluster Computing and the Grid, 2001



- Program committee, Commercial Applications for High-Performance Computing, 2001

#### **Editorial Boards**

- *Parallel Computing*, North American Editor, 2003-2005; Editor-in-chief, 2005-2009
- *International Journal of High-Speed Computing*, 1989-1997
- *Concurrency Practice and Experience*, 1989-present
- *IEEE Transactions on Software Engineering*, 1989-1991
- *IEEE Transactions on Parallel and Distributed Systems*, 1991-1996

#### **Thesis Supervision**

Supervised completion of 20 M.S. theses and 19 Ph.D. dissertations. The Renaissance Computing Institute (RENCI) included graduate students from Duke, North Carolina State, and UNC Chapel Hill.

#### **Ph.D Students (Initial Positions)**

- Alex Y.-W. Kwok, 1987 (SUN Microsystems)
- Chong-Kwon Kim, 1987 (Seoul National University)
- Alexander J. Spry, 1988 (Loral)
- Wittaya Watcharawittayakul, 1988
- Dirk C. Grunwald, 1989 (University of Colorado)
- Allen D. Malony, 1990 (University of Oregon)
- Bobby A. A. Nazief, 1991 (University of Indonesia)
- David W. Jensen, 1993 (Pacific Sierra Research)
- Brian K. Totty, 1994 (Inktomi)
- Tara M. Madhyastha, 1997 (UC-Santa Cruz)
- Celso L. Mendes, 1997 (INPE/DPI, Brazil)
- Christopher L. Elford, 1998 (Intel)
- Thomas Kwan, 1998 (McKinsey and Associates)
- Huseyin Simitci, 2000 (Seagate)
- Nancy Tran, 2001 (NCSA)
- Mario Medina, May 2007 (Chile)
- Charng-da Lu, July 2005
- Emma Buneci, April 2008 (Amazon)
- Todd Gambelin, June 2009 (Lawrence Livermore National Laboratory)

#### **Post-doctoral Associates (Initial Positions)**

- Jhy-chun Wang, January 1994-January 1995 (IBM)
- Phyllis Crandall, August 1994-August 1995 (Los Alamos National Laboratory)
- Evgenia Esmirni, August 1995-July 1999 (College of William and Mary)
- Luis DeRose, May 1996-May 1999 (IBM T. J. Watson Research Center)
- Randy Ribler, May 1996-May 1998 (Lynchburg College)
- Jeffrey S. Vetter, January 1998-May 1999 (Lawrence Livermore National Laboratory)
- Mario Pantano, April 1998-March 1999 (Anderson Consulting (Italy))
- Celso Mendes, January 2000-2003

#### **Teaching Awards (University of Illinois)**

Fall 1985, Fall 1992, Fall 1993, Spring 1994, Fall 1994, Spring 1995 (last taught, Spring 1996)

Did not teach at the University of North Carolina due to leadership roles

Last taught Fall 2013 at University of Iowa

#### **Patents and Patent Applications**

- D. A. Reed, S. Sinha, M. E. Fathalla, C. J. Williams, B. L. Hays, "Scalable and Flexible Control System Having Symmetrical Control Units," March 19, 2010

- A. A. Hasan, B. R. Anders and D. A. Reed, "Cellular Service with Improved Service Availability," March 26, 2010
- A. A. Hasan, D. A. Reed, P. W. Garnett, B. R. Anders, "White Spaces Utilization," June 18, 2012
- C. L. Belady, J. R. Larus, D. A. Reed, C. H. Borgs, J. T. Chayes, I. Lobel, I. Menache, H. Nazerzadeh, N. Jain "Data Center System that Accommodates Episodic Computation," October 28, 2010
- J. Aasheim, D. Fortier, M. Hall, A. Johar, D. Reed, "Power and Local Management Based on Contextual Information," June 17, 2011
- A. A. Hassan, D. A. Reed, M. K. Desai, B. R. Anders, Jr, "Direct Connection with Side Channel Control," December 14, 2010
- A. Hassan, B. R. Anders, D. A. Reed, P. W. Garnett, "Location Determination for White Space Utilization," December 8, 2011
- A. Hassan, D. A. Reed, T. J. Griffin, "Cognitive Use of Multiple Regulatory Domains," December 9, 2010
- A. A. Hassan, D. A. Reed, P. W. Garnett, B. R. Anders, Frequency Hopping For Dynamic Spectrum Access, May 14, 2012
- A. A. Hassan, D. A. Reed, P. W. Garnett, "Control Coding for Noncontiguous Channel Aggregation," June 19, 2012
- A. A. Hassan, B. R. Anders, Jr., D. A. Reed, P. W. Garnett, "Location Determination for White Spaces Utilization," June 8, 2011
- S. Batchiche, J. R. Cheatham, III, P. H. Dietz, M. G. Dyor, P. A. Eckhoff, A. Gupta, K. P. Hinckley, R. A. Hyde, M. Y. Ishikawa, J. T. Kare, C. J. Mundie, N. P. Myhrvold, A. G. Nowatzky, R. C. Petroski, D. Reed, C. T. Tegreene, C. Whitmer, L. L. Wood, Jr., V. Y.H. Wood, "Multimode Stylus," March 14, 2013
- S. Bathiche, J. R. Cheatham, III, P. H. Dietz, M. G. Dyor, P. A. Eckhoff, A. Gupta, JR., K. P. Hinckley, III, R. A. Hyde, M. Y. Ishikawa, J. T. Kare, C. J. Mundie, N. P. Myhrvold, A. G. Nowatzky, R. C. Petroski, D. A. Reed, C.T. Tegreene, C. Whitmer, V. Y.H. Wood, L. L. Wood, JR, "Systems and Methods for Parallax Computation," March 15, 2013
- M. Davis, M. Dyor, W. Gates, X. Huang, R. Hyde, E. Jung, J. Kare, R. Levien, R. Lord, R. Lord, Q. Lu, M. Malamud, N. Myhrvold, S. Nadella, D. Reed, H. Shum, C. Tegreene and L. Wood, Computational Systems and Methods for Preparing Data for Double-Encryption and Anonymous Storage, March 14, 2013
- M. Davis, M. Dyor, W. Gates, X. Huang, R. Hyde, E. Jung, J. Kare, R. Levien, R. Lord, R. Lord, Q. Lu, M. Malamud, N. Myhrvold, S. Nadella, D. Reed, H. Shum, C. Tegreene and L. Wood, Computational Systems and Methods for Preparing Data for Anonymized Storage of Double-Encrypted Data, March 14, 2013
- M. E. Davis, M. G. Dyor, W. Gates, X. Huang, R. A. Hyde, E. K.Y. Jung, J. T. Kare, R. A. Levien, Q. Lu, M. A. Malamud, N. P. Myhrvold, S. Nadella, D. Reed, H. Shum, C. T. Tegreene, L. L. Wood, JR., "Context Sensitive Query Enrichment," October 31, 2011

- M. E. Davis, M. G. Dyor, W. Gates, X. Huang, R. A. Hyde, E. K. Y. Jung, J.T. Kare, R. A. Levien, R. T. Lord, R. W. Lord, Q. Lu, M. A. Malamud, N. P. Myhrvold, S. Nadella, D. Reed, H. Shum, C. T. Tegreene, L. L. Wood, JR., "Computational Systems and Methods for Regulating Information Flow During Interactions," December 29, 2011
- M. E. Davis, M. G. Dyor, W. Gates, X. Huang, R. A. Hyde, E. K.Y. Jung, J. T. Kare, R. A. Levien, R. T. Lord, R. W. Lord, Q. Lu, M. A. Malamud, N. P. Myhrvold, S. Nadella, D. Reed, H. Shum, C. T. Tegreene, L. L. Wood, JR., "Computational Systems and Methods for Identifying a Communications Partner," December 27, 2011
- M. E. Davis, M. G. Dyor, W. Gates, X. Huang, R. A. Hyde, E. K.Y. Jung, R. A. Levien, R. T. Lord, R. W. Lord, Q. Lu, M. A. Malamud, N. P. Myhrvold, S. Nadella, D. Reed, H. Shum, C. T. Tegreene, L. L. Wood, JR., "Computational Systems and Methods for Linking Users of Devices," September 9, 2011
- M. E. Davis, M. G. Dyor, W. Gates, X. Huang, R. A. Hyde, E. K.Y. Jung, R. A. Levien, R. T. Lord, R. W. Lord, Q. Lu, M. A. Malamud, N. P. Myhrvold, S. Nadella, D. Reed, H. Shum, C. T. Tegreene, L. L. Wood, JR., "Computational Systems and Methods for Disambiguating Search Terms Corresponding to Network Members," September 30, 2011
- M. E. Davis, M. G. Dyor, W. Gates, X. Huang, R. A. Hyde, E. K.Y. Jung, R. A. Levien, R. T. Lord, R. W. Lord, Q. Lu, M. A. Malamud, N. P. Myhrvold, S. Nadella, D. Reed, H. Shum, C. T. Tegreene, L. L. Wood, JR., "Computational Systems and Methods for Verifying Personal Information During Transactions," December 30, 2011

## Research Publications

### Books Authored

- D. A. Reed and R. M. Fujimoto, Multicomputer Networks: Message-Based Parallel Processing, MIT Press, November 1987, 380 pages.

### Books Edited

- Sixth SIAM Conference on Parallel Processing for Scientific Computing, Richard F. Sincovec, D. E. Keyes, M. R. Leuze, L. R. Petzold, and D. A. Reed (eds.), *SIAM*, Philadelphia, PA, 1993.
- Debugging and Performance Tuning for Parallel Computing Systems, *IEEE Computer Society Press*, M. L. Simmons, A. H. Hayes, D. A. Reed, and J. Brown (eds.), Los Alamitos, CA, 1996.
- Scalable Input/Output: Achieving System Balance, *MIT Press*, D. A. Reed (ed.), Cambridge, MA, 2003

### Book Chapters

- D. A. Reed, "A Simulation Study of Multimicrocomputer Networks," in Advanced Computer Architecture: Tutorial, Dharma P. Agrawal (ed.), *IEEE Computer Society Press*, 1986.
- D. C. Grunwald and D. A. Reed, "Benchmarking Hypercube Hardware and Software," in Hypercube Multiprocessors 1987, *Society for Industrial and Applied Mathematics*, Michael T. Heath (ed.), Knoxville, TN, September 1987, pp. 169-177.
- D. A. Reed and A. D. Malony, "Visualizing Parallel Computer System Performance," in Instrumentation for Future Parallel Systems, Margaret Simmons, Rebecca Koskela, and Ingrid Bucher (eds). *Addison-Wesley*, 1989, pages 59-90.
- D. A. Reed, "Instrumenting Distributed Memory Parallel Systems: A Report," in Instrumentation for Future Parallel Computing Systems, Margaret Simmons, Rebecca Koskela, and Ingrid Bucher (eds), *Addison-Wesley*, 1989, pages 239-250.
- A. D. Malony, D. A. Reed, and D. C. Rudolph, "Integrating Performance Data Collection, Analysis, and Visualization," in Parallel Computer Systems: Performance Instrumentation and Visualization,

Margaret Simmons, Rebecca Koskela, and Ingrid Bucher (eds), *Addison-Wesley*, 1990, pages 73-97.

- D. A. Reed, "Performance Instrumentation Techniques for Parallel Systems," in Models and Techniques for Performance Evaluation of Computer and Communications Systems, L. Donatiello and R. Nelson (eds), *Springer-Verlag Lecture Notes in Computer Science*, 1993, pp. 463-490.
- T. M. Madhyastha and D. A. Reed, "A Framework for Auditory Display Design". in Audification: Proceedings of the International Conference on Auditory Display, Gregory Kramer (ed.), *Addison-Wesley*, Vol. XVIII, Santa Fe Institute, Studies in the Sciences of Complexity, November, 1994, pp. 267-289.
- V. S. Adve, J. Mellor-Crummey, M. Anderson, K. Kennedy, J-C. Wang, and D. A. Reed, "Integrating Compilation and Performance Analysis for Data-Parallel Programs," in Debugging and Performance Tuning for Parallel Computing Systems, M. L. Simmons, A. H. Hayes, Daniel A. Reed, and Jeffrey Brown (eds.), *IEEE Computer Society Press*, 1996, pp. 25-51.
- D. A. Reed and R. L. Ribler, "Performance Analysis and Visualization," in Computational Grids: State of the Art and Future Directions in High-Performance Distributed Computing, I. Foster and C. Kesselman (eds.), *Morgan-Kaufman Publishers, Inc.*, San Francisco, CA, 1999, pp. 367-393.
- D. A. Reed and R. A. Aydt, "Performance Analysis and Measurement," in High-Performance Computing, K. Kennedy (ed.), Morgan-Kaufman, 2002.
- K. Kennedy, J. Dongarra, G. Fox, D. Reed, and A. White, "Parallel Programming Considerations," in High-Performance Computing, K. Kennedy (ed), Morgan-Kaufman, 2002.
- D. A. Reed and H. Simitci, "Petascale Storage Systems," in Topics in Ultrascale Computing, T. Sterling (ed.), MIT Press,
- J. V. Huber, Jr., C. L. Elford, D. A. Reed, A. A. Chien, D. S. Blumenthal, "PPFS: A High Performance Portable Parallel File System," High Performance Mass Storage and Parallel I/O: Technologies and Applications, IEEE and Wiley Press, H. Jin, T. Cortes, and R. Buyya (eds), 2001, *reprint of reference 86*.
- E. Smirni, R. A. Aydt, A. A. Chien, and D. A. Reed, "I/O Requirements of Scientific Applications: An Evolutionary View," High Performance Mass Storage and Parallel I/O: Technologies and Applications, IEEE and Wiley Press, H. Jin, T. Cortes, and R. Buyya (eds), 2001, *reprint of reference 95*.
- J. Dongarra, I. Foster, G. Fox, W. Gropp, Reed and K. W. Kennedy "Parallel Programming Considerations," *Sourcebook for Parallel Computing*, pp. 42-68, 2002.
- P. E. Crandall, R. A. Aydt, A. A. Chien, and D. A. Reed, "I/O Characterization and Analysis," Scalable I/O: Achieving System Balance, MIT Press, D. A. Reed (ed), 2003. *reprint of reference 92*.
- C. E. Mendes, C.-L. Lu and D. A. Reed, "Intelligent Application Tuning," The Grid: Blueprint for a New Computing Architecture, Morgan-Kaufman, 2004
- R. J. Fowler, T. Gamblin, G. Kandaswamy, A. Mandal, A. K. Porterfield, L. Ramakrishnan and D. A. Reed, "Challenges of Scale: When All Computing Becomes Grid Computing," in Lucio Grandinetti, Eds., *High Performance Computing and Grids in Action*, Chapter, IOS Press, Amsterdam, 2008.

### **Journal Articles**

- D. A. Reed and H. D. Schwetman, "Cost-Performance Bounds for Multimicrocomputer Networks," *IEEE Transactions on Computers*, C-32(1), January 1983, (derived from Ph.D. thesis) pp. 83-95.
- D. A. Reed, "The Performance of Multimicrocomputer Networks Supporting Dynamic Workloads," *IEEE Transactions on Computers*, C-33(11), November 1984, (derived from Ph.D. thesis), pp. 1045-1048.

- D. A. Reed and M. L. Patrick, "Parallel, Iterative Solution of Sparse Linear Systems: Models and Architectures," *Parallel Computing*, 2, 1985 pp. 45-67
- D. A. Reed and M. L. Patrick, "Iterative Solution of Large, Sparse, Linear Systems on a Static Data Flow Architecture: Performance Studies," *IEEE Transactions on Computers*, C-34(10), October 1985, pp. 874-880.
- M. L. Patrick, D. A. Reed and R. G. Voigt, "The Impact of Domain Partitioning on the Performance of a Shared Memory Multiprocessor," *Parallel Computing*, (5), 1987, pp. 211-218.
- D. A. Reed, L. M. Adams and M. L. Patrick, "Stencils and Problem Partitionings: Their Influence on the Performance of Multiple Processor Systems," *IEEE Transactions on Computers*, C-36(7), July 1987, pp. 845-858.
- D. A. Reed and D. C. Grunwald, "The Performance of Multicomputer Interconnection Networks," *IEEE Computer*, 20(6), June 1987, pp. 63-73.
- D. A. Reed, A. D. Malony and B. D. McCredie, "Parallel Discrete Event Simulation Using Shared Memory," *IEEE Transactions on Software Engineering*, TSE-14(4), April 1988.(unabridged version of SIGMETRICS paper listed above), pp. 541-553.
- J. Putilo, D. A. Reed, and D. C. Grunwald, "Environments for Prototyping Parallel Algorithms," *Journal of Parallel and Distributed Computing*, (5), 1988, pp. 421-437.
- D. A. Reed and D. C. Rudolph, "Experiences with Hypercube Operating System Instrumentation," *International Journal of High-Speed Computing*, 1(4), December 1989, World Scientific Publishing, pp. 517-542.
- A. D. Malony, J. L. Larson, and D. A. Reed, "Tracing Application Program Execution on the Cray X-MP and Cray 2," *Journal of Supercomputing*, (5), 1991, pp. 137-162.
- A. D. Malony, D. A. Reed, and H. Wijshoff, "Performance Measurement Intrusion and Perturbation Analysis," *IEEE Transactions on Parallel and Distributed Computing*, 3(4), July 1992, pp. 433-450.
- D. W. Jensen and D. A. Reed, "A Performance Analysis Exemplar: Parallel Ray Tracing," *Concurrency Practice and Experience*, 4(2), April 1992, pp. 119-141.
- T. M. Madhyastha and D. A. Reed. "Data Sonification: Do You See What I Hear?" *IEEE Software*, Vol. 12, No. 2, March 1995, pp. 45-56.
- D. R. Kohr, X. Zhang, M. Rahman, and D. A. Reed, "The Performance of an Object-Oriented, Parallel Operating Systems," *Scientific Programming*, Vol. 3, 1994, John Wiley & Sons, Inc., pp. 301-324.
- D. Reed, C. Catlett, A. Choudhary, D. Kotz, "Parallel I/O: Getting Ready for Prime Time," *IEEE Parallel and Distributed Technology*, summer 1995.
- D. A. Reed, K. A. Shields, W. H. Scullin, L. F. Tavera, and C. L. Elford, "Virtual Reality and Parallel Systems Performance Analysis," *IEEE Computer*, Vol. 28, No. 11, November 1995, pp. 57-67.
- T. T. Kwan, R. E. McGrath, and D. A. Reed, "NSCA's World Wide Web Server: Design and Performance," *IEEE Computer*, Vol. 28, No. 11, November 1995, pp. 68-74.
- V. E. Taylor, M. Huang, T. Canfield, R. Stevens, D. Reed, and S. Lamm, "Performance Modeling of Interactive, Immersive Virtual Environments for Finite Element Simulations," *International Journal of Supercomputer Applications and High Performance Computing, Special Issue: I-WAY: Wide Area Supercomputer Applications*, Vol. 10, No. 2/3, Summer/Fall 1996, pp. 145-156.
- S. E. Lamm, Daniel A. Reed and Will H. Scullin, "Real-time Geographic Visualization of World Wide Web Traffic," *World Wide Web Journal, The Web After Five Years* O'Reilly & Associates, Roger Hurwitz (ed.), summer 1996.
- O. Y. Nickolayev, R. C. Roth, and D. A. Reed, "Real-time Statistical Clustering for Event Trace Reduction," *International Journal of Supercomputer Applications and High Performance*

*Computing*, Vol. II, No. 2, Summer 1997. Jack Dongarra and Bernard Tourancheau (eds), Special Issue, *Proceedings of the Third Workshop on Environments and Tools for Parallel Scientific Computing*, pp. 144-159.

- C. L. Elford and D. A. Reed, "Technology Trends and Disk Array Performance," *Journal of Parallel and Distributed Computing*, Vol. 46, 1997, pp. 136-147.
- H. Simitci and D. A. Reed, "A Comparison of Logical and Physical Parallel I/O Patterns," *International Journal of Supercomputer Applications and High Performance Computing (IJSAHPC)*, August 1998, Vol. 12, No. 3.
- D. A. Reed, R. C. Giles, and C. E. Catlett, "Distributed Data and Immersive Collaboration," *Communications of the ACM*, Vol. 40, No. 11, November 1997, pp. 38-49.
- E. Smirni and D. A. Reed, "Workload Characterization of Input/Output Intensive Parallel Applications," *Performance Evaluation*, 1998.
- E. Shaffer, S. Whitmore, B. Schaeffer, and D. A. Reed, "Virtue: Immersive Performance Visualization of Parallel and Distributed Applications," *IEEE Computer*, December 1999, pp. 44-51.
- J. S. Vetter and D. A. Reed, "Real-time Performance Monitoring, Adaptive Control and Interactive Steering of Computational Grids," *International Journal of Supercomputer Applications and High Performance Computing (IJSAHPC)*, 2000
- R. L. Ribler, H. Simitci, and D. A. Reed, "The Autopilot Performance-Directed Adaptive Control System," *Future Generation Computer Systems*, special issue (Performance Data Mining), 18 (1) pp. 175-187, September 2001
- F. Berman, A. Chien, K. Cooper, J. Dongarra, I. Foster, D. Gannon, L. Johnsson, K. Kennedy, C. Kesselman, J. Mellor-Crummey, D. Reed, L. Torczon, and R. Wolski, "The GrADS Project: Software Support for High-Level Grid Application Development," *International Journal of High Performance Applications and Supercomputing*, Volume 15, Number 4, Winter, 2001, pp 327-344
- D. A. Reed, "Grids, the TeraGrid, and Beyond," *IEEE Computer*, Volume 36, Number 1, pp. 62-68, January 2003
- N. Tran and D. A. Reed, "Automatic ARIMA Time Series Modeling for Adaptive I/O Prefetching," *IEEE Transactions on Parallel and Distributed Computing*, February 2004.
- C.L. Mendes, C.L. and D. A. Reed, "Monitoring Large Systems via Statistical Sampling," *The International Journal of High Performance Computing Applications*, Vol.18, No.2, Summer 2004, pp.267-277.
- Cooper, K. et al "New Grid Scheduling and Rescheduling Methods in the GrADS Project", Workshop of The NSF Next Generation Software Program, International Parallel and Distributed Processing Symposium (IPDPS'04), Santa Fe, April 2004.
- D. A. Reed and Mendes, C.L. "Intelligent Monitoring for Adaptation in Grid Applications," *Proceedings of the IEEE*, Vol. 93, No. 2, pp. 426-435, February 2005
- D. A. Reed, C-D. Lu and C. L. Mendes, "Reliability Challenges in Large Systems," *Future Generation Computer Systems*, Vol. 22, No. 3, pp. 293-302, February 2006
- C. Catlett, W. E. Allcock, P. Andrews, R. Aydt, R. Bair, N. Balac, B. Banister, T. Barker, M. Bartelt, P. Beckman, F. Berman, G. Bertoline, A. Blatecky, J. Boisseau, J. Bottum, S. Brunett, J. Bunn, M. Butler, D. Carver, J. Cobb, T. Cockerill, P. F. Couvares, M. Dahan, D. Diehl, T. Dunning, I. Foster, K. Gaither, D. Gannon, S. Goasguen, M. Grobe, D. Hart, M. Heinzl, C. Hempel, W. Huntoon, J. Insley, C. Jordan, I. Judson, A. Kamrath, N. Karonis, C. Kesselman, P. Kovatch, L. Lane, S. Lathrop, M. Levine, D. Lifka, L. Liming, M. Livny, R. Loft, D. Marcusiu, J. Marsteller, S. Martin, S. McCaulay, J. McGee, L. McGinnis, M. McRobbie, P. Messina, R. Moore, R. Moore, J.P. Navarro, J. Nichols, M. E. Papka, R. Pennington, G. Pike, J. Pool, R. Reddy, D. Reed, T. Rimovsky, E. Roberts, R. Roskies, S. Sanielevici, J. Scott, A. Shankar, M. Sheddon, M. Showerman, D. Simmel, A. Singer, D. Skow, S. Smallen, W. Smith, C. Song, R. Stevens, C. Stewart, R. Stock, N. Stone, J.

Towns, T. Urban, M. Vildibill, E. Walker, V. Welch, N. Wilkins-Diehr, R. Williams, L. Winkler, L. Zhao, A. Zimmerman, "TeraGrid: Analysis of Organization, System Architecture and Middleware Enabling New Types of Applications", Vol 16, *High-Performance Computing and Grids in Action, Advances in Parallel Computing*, pp. 225-249, 2006

- K. K. Droegemeier, D. Gannon, D. Reed, B. Plale, J. Alameda, T. Baltzer, K. Brewster, R. Clark, B. Domenico, S. Graves, E. Joseph, D. Murray, R. Ramachandran, M. Ramamurthy, L. Ramakrishnan, J. A. Rushing, D. Weber, R. Wilhelmson, A. Wilson, M. Xue and S. Yalda, "Service-oriented Environments for Dynamically Interacting with Mesoscale Weather," *IEEE Computational Science and Engineering*, Vol. 7, No. 6, pp. 12-29, December 2005
- B. Plale, D. Gannon, J. Brotzge, K. Droegemeier, J. Kurose, D. Mclaughlin, R. Wilhelmson, S. Graves, M. Ramamurthy, R. D. Clark, S. Yalda, D.A. Reed, E. Joseph, V. Chandraeskar, "CASA and LEAD: Adaptive Cyberinfrastructure for Real-Time Multiscale Weather Forecasting," *IEEE Computer*, Vol. 39, No. 11, pp. 56-64, November 2006
- L. Ramakrishnan and D. A. Reed, Predictable Quality of Service Atop Degradable Distributed Systems, *Journal of Cluster Computing*, 2009.
- P. Balaji, W. Feng, H. Lin\*, J. Archuleta, S. Matsuoka, A. Warren, J. Setubal, E. Lusk, R. Thakur, I. Foster, D. Katz, S. Jha, K. Shinpaugh, S. Coghlan, and D. Reed, "Global-Scale Distributed I/O with ParaMEDIC," 22(16): 2266-2281, *Concurrency and Computation: Practice and Experience*, November 2010.
- R. Barga, D. Gannon and D. Reed, "The Client and the Cloud: Democratizing Research Computing," *IEEE Internet Computing*, pp. 72-75, January 2011
- J. Dongarra, P. Beckman, T. Moore, P. Aerts, G. Aloisio, J. Andre, D. Barkai, J. Berthou, T. Boku, B. Braunschweig, F. Cappello, B. Bhapman, X. Chi, A. Choudhary, S. Dosanjh, T. Dunning, S. Fiore, A. Geist, B. Gropp, R. Harrison, M. Hereld, M. Heroux, A. Hoisie, K. Hotta, Z. Jin, Y. Ishikawa, F. Johnson, S. Kale, R. Kenway, D. Keyes, B. Kramer, J. Labarta, A. Lichnewsky, T. Lippert, B. Lucas, B. Maccabe, S. Matsuoka, P. Messina, P. Michielse, B. Mohr, M. Mueller, W. Nagel, H. Nakashmia, M. Papka, D. Reed, M. Sato, E. Seidel, J. Shalf, D. Skinner, M. Snir, T. Sterling, R. Stevens, F. Streitz, B. Sugar, S. Sumimoto, W. Tang, J. Taylor, R. Thakur, A. Trefethen, M. Valero, A. Steen, J. Vetter, P. Williams, R. Wisniewski and K. Yelick (2011). "The International Exascale Software Project Roadmap," *International Journal of High Performance Computing Applications*, 25(3), January 2011
- D. Da Silva, D. Reed and D. Xu (eds), *Journal of Internet Services and Applications*, Special Issue on Cloud Computing, Volume 2, No. 1, July 2011.
- G. Blair, F. Kon, W. Cirne, D. Milojicic, R. Ramakrishnan, D. Reed, and D. Silva, "Perspectives on Cloud Computing: Interviews with Five Leading Scientists from the Cloud Community," *Journal of Internet Services and Applications*, Special Issue on Cloud Computing, Volume 2, No. 1, July 2011.
- D. A. Reed, D. B. Gannon and J. R. Larus, "Imagining the Future: Thoughts on Computing," *IEEE Computer*, pp. 39-44, January 2012
- D. A. Reed and J. Dongarra, "Exascale Computing and Big Data: The Next Frontier," *Communications of the ACM*, Volume 58, Issue 7, pp. 56-68, July 2015 (cover article)
- D. A. Reed, "Beowulf Clusters: From Research Curiosity to Exascale", ACM Digital Library, 2015
- A. Geist and D. A. Reed, "A Survey of HPC Scaling Challenges," *International Journal of High-Performance Computing Applications*, 2015
- Asch, T. Moore, R. Badia, M. Beck, P. Beckman, T. Bidot, F. Bodin, F. Cappello, A. Choudhary, B. de Supinski, E. Deelman, J. Dongarra, A. Dubey, G. Fox, H. Fu, S. Girona, W. Gropp, M. Heroux, Y. Ishikawa, K. Keahey, D. Keyes, W. Kramer, J.-F. Lavignon, Y. Lu, S. Matsuoka, B. Mohr, D. Reed, S. Requena, J. Saltz, T. Schulthess, R. Stevens, M. Swany, A. Szalay, W. Tang, G. Varoquaux, J.-P. Vilotte, R. Wisniewski, Z. Xu and I. Zacharov, "Big Data and Extreme-Scale Computing: Pathways to Convergence. Toward a Shaping Strategy for a Future Software and Data

Ecosystem for Scientific Inquiry," *International Journal of High Performance Computing Applications*, 2018

### **Highly Refereed Conference Proceedings**

- D. A. Reed, "Estimating Performance Bounds for Multimicrocomputer Networks," *IEEE International Workshop on Computer Systems Organization*, New Orleans, LA, March 29-31, 1983, (derived from Ph.D. thesis), pp. 72-79.
- D. A. Reed, "A Simulation Study of Multimicrocomputer Networks," *Proceedings of the 1983 International Conference on Parallel Processing*, Traverse City, MI, August 23-26, 1983, (derived from Ph.D. thesis), pp. 161-163.
- D. A. Reed, "Queueing Network Models of Multimicrocomputer Networks," *1983 ACM SIGMETRICS Conference on Measurement and Modeling of Computer Systems*, Minneapolis, MN, August 29-31, 1983, (derived from Ph.D. thesis), pp. 190-197.
- D. A. Reed and M. L. Patrick, "A Model of Asynchronous Iterative Algorithms for Solving Large, Sparse, Linear Systems," *Proceedings of the 1984 International Conference on Parallel Processing*, Traverse City, MI, August 21-24, 1984, pp. 402-409.
- J. D. Arthur and D. A. Reed, "Prometheus: An Interactive Environment for the Development and Parallel Execution of Functional Programs," *8th International Computer Software and Applications Conference (COMPSAC)*, Chicago, IL, November 7-9 1984, pp. 44-53.
- D. A. Reed, "Parallel Discrete Event Simulation: A Case Study," *Record of Proceedings: The 18th Annual Simulation Symposium*, Tampa, FL, March 13-15, 1985, pp. 95-107.
- D. A. Reed and M. L. Patrick, "Iterative Solution of Large, Sparse, Linear Systems on a Static Data Flow Architecture: Performance Studies," *Proceedings of the 1985 International Conference on Parallel Processing*, St. Charles, IL, August 20-23, 1985, pp. 25-32.
- D. A. Reed and C.-K. Kim, "Packet Routing Algorithms for Integrated Networks," *1987 ACM SIGMETRICS Conference on Measurement and Modeling of Computer Systems*, Banff, Alberta, CA, May 11-14, 1987, *ACM Performance Evaluation Review*, 15(1), pp. 7-15.
- D. C. Grunwald and D. A. Reed, "Benchmarking Hypercube Hardware and Software," *Proceedings of the Second Conference on Hypercube Multiprocessors*, Knoxville, TN, September 29-October 1, 1986, published as *Hypercube Multiprocessors 1987*, SIAM Press, M. T. Heath (ed), pp.169-177.
- D. A. Reed, P. K. McKinley and M. F. Barr, "Performance Analysis of Switching Strategies," *Proceedings of the 1987 Symposium on the Simulation of Computer Networks*, Colorado Springs, CO, August 4-7, 1987, pp. 130-141.
- J. Purtilo, D. A. Reed and D. C. Grunwald, "Environments for Prototyping Parallel Algorithms," *1987 International Conference on Parallel Processing*, St. Charles, IL, August 17-21, 1987, pp. 431-438.
- A. D. Malony, D. A. Reed and P. McGuire, "MPF: A Message Passing Library for Shared Memory Parallel Processors," *1987 International Conference on Parallel Processing*, St. Charles, IL, August 17-21, 1987, pp. 739-741.
- D. A. Reed, D. K. Bradley, D. C. Grunwald, C.-K. Kim, and B. A. A. Nazief, "Picasso: An Experiment in Hypercube Operating System Design," *Third Conference on Hypercube Concurrent Computers and Applications*, Pasadena, CA, January 19-20, 1988, pp. 364-373.
- C. Stunkel and D. A. Reed, "Hypercube Implementation of the Simplex Algorithm," *Third Conference on Hypercube Concurrent Computers and Applications*, Pasadena, CA, January 19-20, 1988, pp. 1473-1482.
- D. A. Reed and D. C. Grunwald, "Networks for Parallel Processors: Measurements and Prognostications," *Third Conference on Hypercube Concurrent Computers and Applications*, Pasadena, CA, January 19-20, 1988, pp. 610-619.



- C.-K. Kim and D. A. Reed, "Adaptive Packet Routing for a Hypercube," *Third Conference on Hypercube Concurrent Computers and Applications*, Pasadena, CA, January 19-20, 1988, pp. 625-630.
- D. A. Reed and A. D. Malony "Discrete Event Simulation: The Chandy-Misra Approach," *Society for Computer Simulation Multiconference*, San Diego, CA, February 3-5, 1988, pp. 8-13.
- E. Chow, H. Madan, J. Peterson, D. Grunwald, and D. Reed, "Hyperswitch Network for the Hypercube Computer," *Fifteenth Annual International Symposium on Computer Architecture*, Honolulu, HI, May 30-June 2, 1988, pp. 90-99.
- R. C. Chen and D. A. Reed, "A Job Scheduling System Implementation and its Performance Evaluation," *Thirteenth Conference on Local Computer Networks*, Minneapolis, MN, October 10-12, 1988, pp. 184-192.
- C. B. Stunkel, W. Kent Fuchs, D. C. Rudolph, and D. A. Reed, "Linear Optimization: A Case Study in Performance Analysis," *Fourth Conference on Hypercube Concurrent Computers and Applications*, Monterey, CA, March 1989, pp. 625-630.
- D. C. Rudolph and D. A. Reed, "CRYSTAL: Operating System Instrumentation for the Intel iPSC/2," *Fourth Conference on Hypercube Concurrent Computers and Applications*, Monterey, CA, March 1989, pp. 249-252.
- A. D. Malony, D. A. Reed, J. W. Arendt, R. A. Aydt, D. Grabas, and B. K. Totty, "An Integrated Performance Data Collection, Analysis, and Visualization System," *Fourth Conference on Hypercube Concurrent Computers and Applications*, Monterey, CA, March 1989. Association for Computing Machinery, pp. 229-236.
- D. K. Bradley and D. A. Reed, "Performance of the Intel iPSC/2 Input-Output System," *Fourth Conference on Hypercube Concurrent Computers and Applications*, Monterey, CA, March 1989. Association for Computing Machinery, Golden Gate Enterprises, pp. 141-144.
- D. K. Bradley and D. A. Reed, "Performance of the Input-Output Subsystem for the Intel iPSC/2," *Fourth Conference on Hypercube Concurrent Computers and Applications*, Monterey, CA, March 6-8, 1989.
- M. A. Hartman and D. A. Reed, "Fault Tolerant Routing in Message-Switched Hypercubes," *Fourth Conference on Hypercube Concurrent Computers and Applications*, Monterey, CA, March 6-8, 1989.
- C. B. Stunkel, W. K. Fuchs, D. C. Rudolph, and D. A. Reed, "Linear Optimization: A Case Study in Performance Analysis," *Fourth Conference on Hypercube Concurrent Computers and Applications*, Monterey, CA, March 6-8, 1989.
- D. C. Grunwald, B. A. A. Nazief, and D. A. Reed, "Empirical Comparison of Heuristic Load Distribution in Point-to-Point Multicomputer Networks," *Proceedings of the Fifth Distributed Memory Computing Conference*, Charleston, SC, April 1990. IEEE Computer Society Press, pp. 610-619.
- A. D. Malony and D. A. Reed, "A Hardware-Based Performance Monitor for the Intel iPSC/2 Hypercube," *ACM International Conference on Supercomputing*, Amsterdam, June 1990. Association for Computing Machinery, pp. 213-226.
- A. D. Malony, J. L. Larson, and D. A. Reed, "Tracing Application Program Execution on the Cray X-MP and Cray 2," *Supercomputing '90*, New York, November 1990, Association for Computing Machinery, pp. 60-73.
- D. A. Reed, J. Arendt, R. Aydt, T. Birkett, D. Jensen, T. Madhyastha, B. Nazief, T. Nelson, R. Olson, and B. Totty, "Scalable Performance Environments for Parallel Systems," *Sixth Distributed Memory Computing Conference*, April 28-May 2, 1991, Portland, OR, pp. 562-569.
- A. D. Malony and D. A. Reed, "Models for Performance Perturbation Analysis," *Proceedings of the Workshop on Parallel and Distributed Debugging*, May 1991, pp. 1-12.

- B. K. Totty and D. A. Reed, "Dynamic Object Management for Distributed Data Structures," *Supercomputing '92*, Minneapolis, MN, November 1992, Association for Computing Machinery, pp. 692-701.
- D. A. Reed, R. A. Ayd, R. J. Noe, P. C. Roth, K. A. Shields, B. Schwartz, and L. F. Tavera, "Scalable Performance Analysis: The Pablo Performance Analysis Environment," Anthony Skjellum (ed.), *Proceedings of the Scalable Parallel Libraries Conference*, IEEE Computer Society, October 1993, pp. 104-113.
- D. W. Jensen and D. A. Reed, "File Archive Activity in a Supercomputing Environment," *Proceedings of the Seventh ACM International Conference on Supercomputing*, Tokyo, Japan, July 1993.
- T. Kwan and D. A. Reed, "Performance Evaluation of the CM-5," *Supercomputing '93*, November 1993, pp. 192-201.
- D. A. Reed, "Experimental Analysis of Parallel Systems: Techniques and Open Problems," *Proceedings of the Eighth International Conference on Modelling Techniques and Tools for Computer Performance Evaluation*, May 1994, Vienna, Austria. pp. 25-51.
- T. T. Kwan and D. A. Reed, "Performance of the CM-5 Scalable File System," *Proceedings of the 8th ACM International Conference on Supercomputing*, July 1994, Manchester, England, pp. 156-165.
- D. R. Kohr, X. Zhang, M. Rahman, and D. A. Reed, "Object-Oriented Parallel Operating Systems: A Performance Study," *27th Hawaii International Conference on System Sciences*, Hesham El-Rewini and Bruce D. Shriver (eds.), Wailea, Hawaii, Vol. II, January 4-7, 1994, pp. 76-85.
- K. A. Shields, L. F. Tavera, W. H. Scullin, C. L. Elford, D. A. Reed, "Virtual Reality for Parallel Computer Systems Performance Analysis," *Computer Graphics Annual Series of SIGGRAPH '94 Visual Proceedings*, July 1994, p. 261.
- J. V. Huber, Jr., C. L. Elford, D. A. Reed, A. A. Chien, D. S. Blumenthal, "PPFS: A High Performance Portable Parallel File System," *International Conference on Supercomputing*, July 1995.
- W. H. Scullin, T. T. Kwan, and D. A. Reed, "Real-time Visualization of NCSA's World Wide Web Data," *Symposium on Visualizing Time-Varying Data*, September 1995.
- V. S. Adve, J. Mellor-Crummey, M. Anderson, K. Kennedy, J-C. Wang, D. A. Reed, "An Integrated Compilation and Performance Analysis Environment for Data Parallel Programs," *Supercomputing '95*, December 1995, CDROM.
- P. E. Crandall, R. A. Ayd, A. A. Chien, and D. A. Reed, "Input/Output Characteristics of Scalable Parallel Applications," *Supercomputing '95*, December 1995, pp. .
- D. A. Reed, C. L. Elford, T. Madhyastha, W. H. Scullin, R. A. Ayd, and E. Smirni, "I/O, Performance Analysis, and Performance Data Immersion," *MASCOTS '96*, February 1996, pp. 5-16.
- S. E. Lamm, D. A. Reed, and W. H. Scullin, "Real-time Geographic Visualization of World Wide Web Traffic," *Proceedings of the Fifth International WWW Conference*, Computer Networks and ISDN Systems, Paris, France, V-28,. (May 1996), pp. 1457-1468.
- E. Smirni, R. A. Ayd, A. A. Chien, and D. A. Reed, "I/O Requirements of Scientific Applications: An Evolutionary View," *Proceedings of the Fifth IEEE International Symposium on High Performance Distributed Computing*, August 6-9, 1996, pp. 49-59.
- D. A. Reed, C. L. Elford, T. M. Madhyastha, E. Smirni, and S. E. Lamm, "The Next Frontier: Interactive and Closed Loop Performance Steering," *Proceedings of the 1996 ICPP Workshop on Challenges for Parallel Processing*, Bloomington, IL, August 12, 1996, pp. 20-31.
- T. M. Madhyastha, C. L. Elford, and D. A. Reed, "Optimizing Input/Output Using Adaptive File System Policies," *Fifth NASA Goddard Conference on Mass Storage Systems and Technologies*, College Park, MD, September 1996, pp. 493-514.

- D. A. Reed, M. J. Gardner, and E. Smirni, "Performance Visualization: 2-D, 3-D, and Beyond," *International Computer Performance and Dependability Symposium (IPDS'96)*, September 4-6, 1996, Urbana, Illinois.
- T. M. Madhyastha and D. A. Reed, "Intelligent, Adaptive File System Policy Selection," *Frontiers of Massively Parallel Computing*, Annapolis, MD, October 1996, pp. 172-179.
- E. Smirni, C. L. Elford, and D. A. Reed, "Performance Modeling of a Parallel I/O System: An Application Driven Approach," *Proceedings of the Eighth SIAM Conference on Parallel Processing for Scientific Computing*, Minneapolis, MN, March 1997, CD-ROM.
- E. Smirni and D. A. Reed, "Workload Characterization of Input/Output Intensive Parallel Application," *Modeling Techniques and Tools for Computer Performance Evaluation*, Springer-Verlag Lecture Notes in Computer Science, June 1997, Vol. 1245, pp. 169-180.
- T. M. Madhyastha and D. A. Reed, "Input/Output Access Pattern Classification Using Hidden Markov Models," *Workshop on Input/Output in Parallel and Distributed Systems*, San Jose, CA, November 1997, CD-ROM.
- T. M. Madhyastha and Reed, D. A., "Exploiting Global Access Pattern Classification," *SC '97*, San Jose, CA, November 1997, CD-ROM.
- E. Smirni, C. L. Elford, A. J. Lavery, D. A. Reed, and A. A. Chien, "Algorithmic Influences of I/O Access Patterns and Parallel File System Performance," *Modeling Techniques and Tools for Computer Performance Evaluation*, 1998.
- D. A. Reed, R. A. Aydt, L. DeRose, C. L. Mendes, R. L. Ribler, E. Shaffer, H. Simitci, J. S. Vetter, D. R. Wells, S. Whitmore, and Y. Zhang, "Performance Analysis of Parallel Systems: Approaches and Open Problems," *Joint Symposium on Parallel Processing (JSPP)*, Nagoya, Japan, June 1998 (*invited paper and keynote presentation*), pp. 239-256.
- R. L. Ribler, J. S. Vetter, H. Simitci, and D. A. Reed "Autopilot: Adaptive Control of Distributed Applications", *IEEE Seventh Symposium on High-Performance Distributed Computing*, August 1998.
- L. DeRose, Y. Zhang, and D. A. Reed, "SvPablo: A Multi-Language Performance Analysis System," *10<sup>th</sup> International Conference on Computer Performance Evaluation – Modeling Techniques and Tools – Performance Tools'98*, Palma de Mallorca, Spain, September 1998, pp. 352-355.
- C. L. Mendes and D. A. Reed, "Integrated Compilation and Scalability Analysis for Parallel Systems," *International Conference on Parallel Architectures and Compilation Techniques (PACT'98)*, Paris, France, October 1998, pp.385-392.
- D. A. Reed, D. A. Padua, I. T. Foster, D. B. Gannon, and B. P. Miller, "Delphi: An Integrated, Language-Directed Performance Prediction, Measurement, and Analysis Environment," *The 7<sup>th</sup> Symposium on the Frontiers of Massively Parallel Computation*, Annapolis, MD, February, 1999. (*invited paper*)
- H. Simitci and D. A. Reed, "Adaptive Disk Striping for Parallel Input/Output," *Proceedings of the Seventh Goddard Conference on Mass Storage Systems and Technologies*, March, 1999
- H. Simitci, D. A. Reed, R. Fox, M. Medina, J. Oly, N. Tran, and G-Y. Wang, "A Framework for Adaptive Storage Input/Output on Computational Grids," *Proceedings of the 3<sup>rd</sup> Workshop on Runtime Systems for Parallel Programming (RTSPP)*, April 1999.
- T. Kwan and D. A. Reed, "Performance Evaluation of an Infrastructure for Worldwide Parallel Computing," *Proceedings of the 13th International Parallel Processing Symposium and 10th Symposium on Parallel and Distributed Processing (IPPS/SPDP'99)*, San Juan, Puerto Rico, April 1999.

- L. DeRose, M. Pantano, and D. A. Reed, "An Approach to Immersive Performance Visualization of Parallel and Wide-Area Distributed Applications", *Eighth IEEE Symposium on High-Performance Distributed Computing*, August 1999.
- L. DeRose and D. A. Reed, "Pablo: A Multi-language, Architecture-Independent Performance Analysis System", *International Conference on Parallel Processing*, August 1999.
- C. Casaval, L. DeRose, D. A. Padua, and D. A. Reed, "Compile-time Based Performance Prediction," *LCPC 99*, August 1999.
- J. S. Vetter and D. A. Reed, "Managing Performance Analysis with Dynamic Statistical Projection Pursuit," *Proceedings of SC '99*, Portland, OR, November 1999.
- F. Vraalsen, R. A. Aydt, C. L. Mendes, and D. A. Reed, "Performance Contracts: Prediction and Monitoring Grid Application Behavior," *Proceedings of the 2nd International Workshop on Grid Computing/LNCS (GRID 2001)*, Springer-Verlag Lecture Notes in Computer Science, November 2001
- N. Tran and D. A. Reed, "ARIMA Time Series Modeling and Forecasting for Adaptive I/O Prefetching," *Proceedings of the 15th ACM International Conference on Supercomputing*, June 2001, pp. 473-485.
- J. Oly and D. A. Reed, "Markov Model Prediction of I/O Requests for Scientific Applications," *Proceedings of the 16th ACM International Conference on Supercomputing*, June 2002.
- C-D. Lu and D. A. Reed, "Compact Application Signatures for Parallel and Distributed Scientific Codes," *Proceedings of SC2002*, November 2002.
- C-D. Lu and Reed, D.A. "Assessing Fault Sensitivity in MPI Applications," *Proceedings of SC2004* Pittsburgh, November 2004, *Best Technical Paper Award*
- K. K. Droegemeier *et al* "Linked Environments for Atmospheric Discovery (LEAD): Architecture, Technology Roadmap and Deployment Strategy," Preprints, *21st Conference on Interactive Information Processing Systems for Meteorology, Oceanography, and Hydrology*, San Diego, CA, American Meteorology Society, 2005
- B. Plale D. Gannon, S. Graves, D. Reed, K. Droegemeier, R. Wilhelmson, and M. Ramamurthy, Towards Dynamically Adaptive Weather Analysis and Forecasting in LEAD. Preprints, 2005 International Conference on Computational Science , 22-25 May, Atlanta, GA, 2005
- L. Ramakrishnan, M. S.C Reed, J. L. Tilson and D. A. Reed, "Grid Portals for Bioinformatics," *Second International Workshop on Grid Computing Environments (GCE)*, Workshop at SC|06, November 2006, Tampa, Florida
- G. Kandaswamy, A. Mandal, and D. A. Reed, "Fault Tolerance and Recovery of Scientific Workflows on Computational Grids," *Resilience 2008*
- T. Gamblin, R. Fowler and D. A. Reed, "Scalable Methods for Monitoring and Detecting Behavioral Equivalence Classes in Scientific Codes," *International Parallel and Distributed Processing Symposium (IPDPS)*, Miami, FL, April 2008
- L. Ramakrishnan and D. A. Reed, "Performability Modeling for Scheduling and Fault Tolerance Strategies for Scientific Workflows," *International Symposium on High-Performance Distributed Computing (HPDC)*, Boston, MA, June 2008
- P. Balaj, W. Feng, H. Lin, J. Archuleta, S. Matsuoka, A. Warren, J. Setubal, E. Lusk, R. Thakur, I. Foster, D. S. Katz, S. Jha, K. Shinpaugh, S. Coghlan, D. Reed, "Distributed I/O with ParaMEDIC: Experiences with a Worldwide Supercomputer," *International Conference on Supercomputing*, July 2008
- E. Buneci and D. A. Reed, "Analysis of Application Heartbeats: Learning Structural and Temporal Features in Time Series Data for Identification of Performance Problems," *SC08*, November 2008

- T. Gamblin, B. R. de Supinski, M. Schulz, R. J. Fowler, and D. A. Reed, "Scalable Load-Balance Measurement for SPMD Codes," SC08, November 2008
- K. Venkatesh Vishwanath, A. Greenberg, and D. A. Reed, "Modular Data Centers: How to Design Them?" *Large-scale System and Application Performance Workshop* (LSAP2009), June 2009
- T. Gamblin, B R. de Supinski, M. Schulz, R. Fowler, D. A. Reed, "Clustering Performance Data Efficiently at Massive Scales," *International Conference on Supercomputing*, June 2010
- K-P. Lee, S. J. Kuhl, H. J. Bockholt, B. P. Rogers, and D. A. Reed, "A Cloud-Based Scientific Gateway for Internet of Things Data Analytics," *Practice and Experience in Advanced Research Computing*, July 2018

### Research Funding

1. Toward a Common Digital Continuum Platform for Big Data and Extreme-scale Computing (BDEC2), National Science Foundation, with Jack J. Dongarra, Geoffrey C. Fox and Peter H. Beckman, \$203,406, 2018-2020
2. CYBER-INSIGHT: Evaluating Cyberinfrastructure Total Cost of Ownership, National Science Foundation, \$299,588, 2018-2020
3. SCC: An Integrated and Smart system for Irrigation Management in Rural Communities, National Science Foundation, \$2,998,860, with J.C. Wang, University of Iowa (*pending*)
4. Collaborative Research: Expeditions: Harnessing the Computing Continuum for Programming Our World, National Science Foundation, \$1,649,916 (Iowa share), 2020-2014, joint with Northwestern, Chicago, and Tennessee (*pending*)
5. Iowa Space Grant Consortium, NASA STEM Training Funding Extension for FY18-FY19, National Aeronautics and Space Administration, 2018-2019, \$80,000
6. IEDA Protostudios, State of Iowa, \$1,600,000 (\$1,400,000 plus \$200,000 supplement), 2016-2018
7. "EAGER: Resilient, Energy Efficient HPC System Configuration, National Science Foundation, \$298,828, 2012-2015
8. "Mobile Devices, Sensors and Big Data," Carver Charitable Trust, \$565,540 (joint with Octav Chipara and Alberto Segre)
9. "TeraGrid Grid Infrastructure Group (GIG), National Science Foundation, \$1,493,333, 2004-2009
10. "Cyberinfrastructure in Support of Research: A New Imperative," National Science Foundation, ~\$1,200,000, 2005-2008
11. "Carolina Center for Exploratory Genetic Analysis," National Institutes of Health, \$1,682,665, 2004-2006 (joint with Terry Magnuson)
12. "Linked Environments for Atmospheric Discovery," National Science Foundation, Large Information Technology Research (ITR), 2003-2007, Kelvin Droegemeier (PI), \$11,250,000 (with multiple institutions)
13. "Virtual Grid Application Development Software (VGrADS)," National Science Foundation, Large Information Technology Research (ITR), 2003-2007, Ken Kennedy (PI), \$8,250,000 (with multiple institutions)
14. "National Center for Advanced Secure Systems Research (NCASSR)," Office of Naval Research, \$5,600,000, 2003

15. "An Extensible Terascale Facility: Cyberinfrastructure for 21<sup>st</sup> Century Science and Engineering," National Science Foundation, 9/1/02-8/31/04, \$35,000,000 (with four partner institutions)
16. "ITR: Intelligent High-Performance Computing on Toys," National Science Foundation, 9/6/02-8/31/05, \$409,503
17. "NEESgrid: A Distributed Virtual Laboratory for Advanced Earthquake Experimentation and Simulation," National Science Foundation, 8/1/01-9/30/04, \$10,000,000 (*Senior project advisor*)
18. "The TeraGrid: Cyberinfrastructure for 21<sup>st</sup> Century Science and Engineering," National Science Foundation, 9/1/01-8/31/04, \$26,500,000
19. "National Computational Infrastructure for Lattice Gauge Theory," Department of Energy, 8/1/01-7/31/04, \$374,295
20. "High-End Computing System Performance Science and Engineering," Department of Energy, 8/1/01-7/31/04, \$975,000
21. "National Computational Science Alliance," National Science Foundation PACI Solicitation, 10/1/97-9/30/02, \$161,000,000
22. "CADRE: A National Facility for High-Performance I/O Characterization and Optimization," National Science Foundation, 7/15/99-7/30/04, \$1,200,000
23. "A Uniform Instrumentation, Event and Adaptation Framework for Network Aware Middleware and Advanced Network Applications," Department of Energy, 7/15/99-7/14/02, \$750,000
24. "Wide Area Adaptive I/O Systems for Data and Visualization Corridors," Lawrence Livermore National Laboratory, 8/31/99-8/30/02, \$1,200,000
25. "Intelligent Information Spaces: A Testbed to Explore and Evaluate Intelligent Devices and Augmented Realities," National Science Foundation, 7/31/99-7/30/04, \$2,000,000 (equipment)
26. "Fundamental Methods for Adaptation in Grid Application and Development Environments," National Science Foundation, 9/1/99-12/31/04, co-PI with K. Kennedy and ten other investigators, \$6,200,000 (Illinois share \$500,000)
27. "ASCI/ASAP Center for Simulation of Dynamic Response of Materials," Department of Energy, co-I with D. Merion, Caltech, \$20,000,000, 8/1/97-7/31/02 (Illinois share \$625,000)
28. "ASCI/ASAP Center for Simulation of Advanced Rockets," Department of Energy, co-I with M. Heath and other investigators, \$20,000,000, 8/1/97-7/31/02
29. "An Integrated, Language-Directed Performance Prediction, Measurement and Analysis Environment," Defense Advanced Research Projects Agency, 9/1/97-8/31/00, \$1,518,178
30. "Virtual Environments for Direct Software Manipulation," Defense Advanced Research Projects Agency, 9/1/96-8/31/99, \$1,118,018
31. "Real-time Application Performance Steering and Adaptive Control," Defense Advanced Research Projects Agency, 9/1/96-8/31/99, \$633,533
32. "Collaboration Support for Complex Systems," Defense Advanced Research Projects Agency, 9/1/96-8/31/99, \$1,307,074 (co-PI with S. Kaplan)

33. "Broadband Networks and Multimedia," National Science Foundation, Institutional Infrastructure, 6/1/94-5/31/99, \$1,707,262 (co-PI with R. H. Campbell and A. A. Chien)
34. "Scalable I/O Initiative," DARPA, DOE, NSF, and NASA, 7/1/95-6/30/98, \$771,000 (Illinois share of \$12M)
35. "Parallel I/O Methodologies," National Science Foundation, Grand Challenge Project, 9/1/93-8/30/98, \$385,000 (Illinois share) joint with Caltech
36. "Multicomputer Resource Management Algorithms," National Science Foundation, 7/15/93-6/30/96, \$444,363 (co-PI with A. A. Chien)
37. "Multicomputer Resource Management Algorithms," Advanced Research Projects Agency, 6/1/93-5/31/96, \$748,870 (co-PI with A. A. Chien)
38. "High-Performance Input/Output Systems," National Aeronautics and Space Administration, 8/1/93-8/31/96, \$150,000
39. "High Performance Parallel Input/Output," National Aeronautics and Space Administration, 7/1/93-5/31/98, \$132,000 (two fellowships)
40. "Workshop on Instrumentation for Parallel Computer Systems: A Dialog Between Users and Developers," National Science Foundation, 6/30/94-6/30/95 \$15,006
41. "Pablo Performance Environment," Intel Supercomputer Systems Division, 9/1/92-12/31/94, \$200,000 plus Paragon XP/S donation
42. "Virtual Reality: Understanding Massively Parallel Systems," National Science Foundation, 10/1/92-3/31/96, \$500,000
43. "Workshop: Software Performance Tools for Parallel Computer Systems," National Science Foundation, 7/15/91-6/30/92, \$12,060
44. "Scalable, Open Performance Environments for Parallel Systems," Defense Advanced Research Projects Agency, 5/21/91-6/30/96, \$1,459,541
45. "Graduate Research Fellowship" Advanced Research Projects Agency, 9/21/90-8/20/92, \$40,956
46. "8CE Multiprocessor Joint Study," International Business Machines, Shared Memory Experimental Machine (8CE), 6/30/89-5/31/92
47. "Visualizing Parallel Computer Performance," Digital Equipment Corporation, 8/21/89-8/20/92, \$112,500 (equipment)
48. "Parallel Performance Environments," Apple Computer, 8/21/89-8/20/94, \$15,000 plus equipment
49. "Performance Environment Hardware," Intel Supercomputer Systems Division, 11/1/89-5/31/92, \$63,514 (equipment)
50. "Tapestry: Unifying Shared and Distributed Memory Parallel Systems," National Science Foundation, 8/21/88-12/31/93, \$2,442,447 (CISE Institutional Infrastructure grant with R. H. Campbell)
51. "Tapestry REU Supplement," National Science Foundation, 7/1/91-12/31/92, \$9,600

52. "Picasso: A Vehicle for Multicomputer Systems Research," National Science Foundation, 8/21/88-8/20/90, \$67,523
53. "Presidential Young Investigator Award," National Science Foundation, \$125,000 with industrial matching funds to \$500,000, 6/1/87-5/30/92.
54. "Metropolitan Networks," AT&T Information Systems, 8/15/85-10/31/90, \$763,823 (co-PI with R. H. Campbell and M. Faiman).
55. "Supercomputer Environments," Air Force Office of Scientific Research, University Research Initiative, \$2,509,569, 8/21/86-8/20/91, (co-I with D. J. Kuck *et al*)
56. "Illinois Computing Laboratory for Aerospace Systems and Science," National Aeronautics and Space Administration, \$3,656,300, 8/31/85-8/30/98 (with the Department of Computer Science)
57. "Multiple Microprocessor Computer System," National Science Foundation, \$80,000, 7/1/86-6/30/87 (equipment grant) with \$40,000 additional matching funds
58. "Performance Directed Design of Multimicrocomputer Systems," National Science Foundation, \$55,825, 9/1/84-6/30/87
59. "Research in the Design and Application of Parallel Processors," National Aeronautics and Space Administration, NASA NAS-526405, \$497,298, 12/12/80-4/12/86 (assumed after the death of D. Slotnick)
60. "Design of High-Performance Reconfigurable Systems," National Aeronautics and Space Administration, NASA NAG-5-377, \$158,544, 10/15/83-8/31/87 (assumed after the death of D. Slotnick)
61. "Analysis of Adaptive Algorithms for an Integrated Communication Network," National Aeronautics and Space Administration, NASA NAG-1-595, \$90,359, 6/1/85-9/31/87
62. "Parallel Simulation: A Technique for Efficiently Simulating Complex Systems," Ira Kay Memorial Research Grant in Computer Simulation, \$6000, 4/1/84-4/1/85
63. "Faculty Development Award," International Business Machines, \$60,000, 9/1/84-9/1/86