COLLEGE OF ENGINEERING BIOGRAPHICAL DATA
UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Department: Computer Science

Date: October 28, 2009

1. Name: Heath, Michael Thomas

Citizenship: United States

2. Present Academic Rank: Professor

3. Tenure Status: AA

4. Administrative Title: Director, Computational Science and Engineering, 1996–present
Director, Center for Simulation of Advanced Rockets, 1997–present
Interim Head, Department of Computer Science, 2007–present

5. Degrees

B.A.	Mathematics	University of Kentucky	1968
M.S.	Mathematics	University of Tennessee	1974
Ph.D.	Computer Science	Stanford University	1978

6. Academic Positions Held

- Adjunct Professor, Dept. of Computer Science, University of Tennessee, Knoxville, 1988–1991.
- Professor, Dept. of Computer Science, University of Illinois at Urbana-Champaign, March 1991–present.
- Fulton Watson Copp Chair, Dept. of Computer Science, University of Illinois at Urbana-Champaign, June 2002–present.

7. a. Other Professional Employment

- Scientific Applications Programmer, Oak Ridge National Laboratory, 1968–1974.
- Eugene P. Wigner Postdoctoral Fellow, Oak Ridge National Laboratory, 1978–1980.
- Research Staff Member, Oak Ridge National Laboratory, 1980–1986.
- Computer Science Group Leader, Oak Ridge National Laboratory, 1984–1991.
- Senior Research Staff Member, Oak Ridge National Laboratory, 1986–1991.
- Senior Computer Scientist, Center for Supercomputing Research and Development, March 1991–August 1991.
- Senior Research Scientist, National Center for Supercomputing Applications, 1991–2000.

8. Honors, Recognition and Outstanding Achievements

a. Teaching

- William L. Everitt Award for Teaching Excellence, College of Engineering, University of Illinois at Urbana-Champaign, 1998.
- Honorable Mention, Campus Award for Excellence in Undergraduate Teaching, University of Illinois at Urbana-Champaign, 1999.
- Campus Award for Excellence in Graduate and Professional Teaching, University of Illinois at Urbana-Champaign, 2002.
- Engineering Council Award for Excellence in Advising, 2003.
- "Incomplete List of Teachers Rated Excellent by Their Students," University of Illinois at Urbana-Champaign
  - Fall 1991 term (*Daily Illini*, April 7, 1992).
  - Fall 1993 term (*Daily Illini*, April 5, 1994).
  - Spring 1995 term (*Daily Illini*, October 26, 1995).
  - Fall 1999 term (*Daily Illini*, April 26, 2000).
  - Fall 2000 term (*Daily Illini*, March 28, 2001).
  - Fall 2001 term (*Daily Illini*, March 29, 2002).
  - Spring 2002 term (*Daily Illini*, September 4, 2002).
  - Fall 2002 term (*Daily Illini*, April 4, 2003).
  - Fall 2003 term (*Daily Illini*, April 5, 2004).
  - Spring 2004 term (*Daily Illini*, September 8, 2004).
  - Spring 2008 term.
  - Spring 2009 term (*Daily Illini*, September 2, 2009).

b. Research

- Eugene P. Wigner Postdoctoral Fellow, Oak Ridge National Laboratory, 1978–1980.
- ACM Fellow, Association for Computing Machinery, 2000.
- Recognition of Service Award, Association for Computing Machinery, 2001.
- Member, European Academy of Sciences, 2002.
- Apple Award for Innovation in Science (one of ten awarded nationally), 2007.
- Invited Lectureships (selected list)
  - International Conference on Vector and Parallel Computing, Loen, Norway, 1986.
  - Workshop on Vector and Parallel Computing, Umea, Sweden, 1988.
  - Danish Summer School in Supercomputing, Copenhagen, Denmark, 1989.

- IBM Europe Institute, Oberlech, Austria, 1990.
- Workshop on Performance Measurement and Visualization of Parallel Systems, Moravany, Czechoslovakia, 1992.
- ICASE/LaRC Workshop on Parallel Numerical Algorithms, Hampton, Virginia, 1994.
- Distinguished Lecturer, University of Minnesota Supercomputer Institute, Minneapolis, Minnesota, 1995.
- Distinguished Lecturer, University of Tennessee, Knoxville, Tennessee, 1999.
- Keynote Speaker, NSF Workshop on Model-Based Simulation, Arlington, Virginia, 1999.
- Keynote Speaker, DOE Computational Science Graduate Fellowship Conference, Washington, DC, 1999.
- Plenary Speaker, Eleventh SIAM Conference on Parallel Processing for Scientific Computing, San Francisco, California, February 2004.
- Invited Speaker, Sixth International Meeting on High Performance Computing for Computational Science, Valencia, Spain, June 2004.
- Cornell University, Ithaca, New York, May 2005.
- Distinguished Lecturer, Joint Institute for Computational Science, Oak Ridge National Laboratory, Oak Ridge, Tennessee, October 2005.
- Distinguished Lecturer, University of Tennessee, Knoxville, Tennessee, October 2005.
- Cray Distinguished Lecturer, University of Minnesota, Minneapolis, Minnesota, November 2005.
- Harvard University, Cambridge, Massachusetts, September 2006.
- DOE Scientific Discovery Through Advanced Computing (SciDAC) Conference, Boston, June 2007.
- Distinguished Lecturer, Penn State University, University Park, Pennsylvania, February 2008.

FACTUAL INFORMATION

A. Resident Instruction and Continuing Education

1. Resident Instruction

Semester	Course	Units	Per Week	Students	Instruction	Responsibility
Fall 91	CS 350	3.0	3.0	21	lect/disc	100
Fall 92	CS 350	3.0	3.0	48	lect/disc	100
Fall 93	CS 350	3.0	3.0	83	lect/disc	100
Fall 94	CS 350	3.0	3.0	67	lect/disc	100
Spr 95	CS 491	1.2	1.2	4	lect/disc	100
Fall 95	CS 350	3.0	3.0	90	lect/disc	100
Fall 95	CS 491	1.2	1.2	9	lect/disc	100
Spr 96	CS 491	1.2	1.2	8	lect/disc	100
Fall 96	CS 491	1.2	1.2	6	lect/disc	100
Spr 97	CS 454	3.0	3.0	27	lect/disc	100
Spr 97	CS 491	1.2	1.2	10	lect/disc	100
Fall 97	CS 350	3.0	3.0	81	lect/disc	100
Fall 97	CS 491	1.2	1.2	5	lect/disc	100
Spr 98	CS 491	1.2	1.2	11	lect/disc	100
Fall 98	CS 350	3.0	3.0	81	lect/disc	100
Fall 98	CS 491	1.2	1.2	13	lect/disc	100
Spr 99	CS 491	1.2	1.2	6	lect/disc	100
Spr 99	CS 497	1.5	1.5	7	lect/disc	100
Fall 99	CS 454	3.0	3.0	43	lect/disc	100
Fall 99	CS 491	1.2	1.2	15	lect/disc	100
Spr 00	CS 491	1.2	1.2	17	lect/disc	100
Fall 00	CS 350	3.0	3.0	106	lect/disc	100
Fall 00	CS 491	1.2	1.2	12	lect/disc	100
Spr 01	CS 491	1.2	1.2	15	lect/disc	100
Fall 01	CS 350	3.0	3.0	98	lect/disc	100
Fall 01	CS 491	1.2	1.2	18	lect/disc	100
Spr 02	CS 454	3.0	3.0	29	lect/disc	100
Spr 02	CS 491	1.2	1.2	14	lect/disc	100
Fall 02	CS 350	3.0	3.0	104	lect/disc	100
Fall 02	CS 491	1.2	1.2	10	lect/disc	100
Spr 03	CS 199	1.2	1.2	8	lect/disc	100
Spr 03	CS 491	1.2	1.2	7	lect/disc	100
Fall 03	CS 199	1.2	1.2	4	lect/disc	100
Fall 03	CS 350	3.0	3.0	113	lect/disc	100
Fall 03	CS 491	1.2	1.2	8	lect/disc	100
Spr 04	CS 454	3.0	3.0	30	lect/disc	100
Spr 04	CS 491	1.2	1.2	6	lect/disc	100
Fall 04	CS 450	3.0	3.0	97	lect/disc	100
Fall 04	CS 591	1.2	1.2	8	lect/disc	100
Spr 05	CS 591	1.2	1.2	9	lect/disc	100
Fall 05	CS 591	1.2	1.2	6	lect/disc	100
Spr 06	CS 554	3.0	3.0	19	lect/disc	100
Spr 06	CS 591	1.2	1.2	5	lect/disc	100
Fall 06	CS 591	1.2	1.2	3	lect/disc	100
Spr 07	CS 450	3.0	3.0	86	lect/disc	100
Spr 07	CS 591	1.2	1.2	4	lect/disc	100
Fall 07	CS 458	3.0	3.0	14	lect/disc	100
Fall 07	CS 591	1.2	1.2	5	lect/disc	100
Spr 08	CS 554	3.0	3.0	10	lect/disc	100
Spr 08	CS 591	1.2	1.2	1	lect/disc	100

2. Continuing Education

None

3. Other Instructional Activities

- Played an active role in various workshops and other educational activities offered by the National Center for Supercomputing Applications (NCSA).

- Developed instructional materials for a new course, CS 350 — Numerical Analysis, A Comprehensive Introduction — and taught its inaugural offering in 1991. Lecture notes developed, which are also used by other instructors who have taught the course, evolved into a textbook published by McGraw-Hill in 1997 and in a revised edition in 2002.

- Served on committee for all comprehensive exams in Numerical Analysis in the Dept. of Computer Science, 1991–95, and composed the comprehensive exams in Numerical Analysis, January 1992, January 1993, January 1994, and January 1995.

- Served on Ph.D. preliminary examination committees for the following students: Attila Gursoy (November 1991), Xiaoge Wang (May 1992), Brian Totty (May 1992), Henry Neeman (August 1992), Ed Kornkven (April 1993), Ulrike Meier Yang (July 1993), Lawrence Rauchwerger (October 1993), William Blume (November 1993), Roger Bringmann (April 1994), Kent Seamons (September 1994), Antonio Lain (September 1994), Fernando Carranza (December 1994), Celso Mendes (April 1995), J. Sreedhar (August 1995), Ying Chen (November 1995), Yi Shang (March 1996), James Bordner (May 1996), Tara Madhyastha (July 1996), Paul Hovland (October 1996), Jason Hibbeler (November 1996), Alireza Namazifard (December 1996), Szu-Wen Kuo (January 1997), Yong Cho (September 1997), Jay Hoeflinger (December 1997), Akhil Vidwans (January 1998), Boyana Norris (April 1998), Jesus Izaguirre (April 1998), Yuan Lin (June 1998), Tao Wang (June 1998), David Solt (July 1998), George Almasi (March 1999), Damrong Guoy (June 1999), Jason Hales (July 1999), Xiangmin Jiao (May 2000), Gang Zou (July 2000), Ali Pinar (October 2000), David Hardy (November 2000), Nathan Crane (December 2000), Milind Bhandarkar (February 2001), Wing Fai Chow (March 2001), Kemal Aygun (May 2001), Jonghyun Lee (October 2001), Jin Young Kim (November 2001), Taras Pogorelov (April 2002), Xiaosong Ma (May 2002), Vanessa Lopez (January 2003), Patrick O'Donoghue (January 2003), Wei Wang (March 2003), Terry Wilmarth (May 2003), Arun Prakash (May 2003), Eric Shaffer (November 2003), Orion Lawlor (April 2004), Gengbin Zheng (April 2004), Rebecca Hartman-Baker (May 2004), Michael Parks (June 2004), Rajeev Jaiman (June 2004), Shripad Thite (August 2004), Christopher Siefert (November 2004), Ganesh Bikshandi (May 2005), Kalyana Nakshatrala (December 2005), Shun Wang (April 2006), Hanna VanderZee (April 2006), David Alber (May 2006), Jia Guo (June 2006), William Cochran (June 2006), Daniel Turner (May 2007), Chee Wai Lee (May 2007), Eric Cyr (September 2007), Nathan Bell (December 2007), John Eargle (February 2008), Andrew Colombi (April 2008), Michael Wolf (April 2008), Jeronymo Pereira (November 2008), Daniel Manjarres (May 2009), Jacob Schroder (May 2009), James Brodman (September 2009), Isaac Dooley (November 2009), Mark Gates (November 2009), JaeHyuk Kwack (December 2009).

- Served on Ph.D. final examination committees for the following students: Xiaoge Wang (September 1993), Attila Gursoy (March 1994), Brian Totty (August 1994), Ed Kornkven (December 1994), Ulrike Meier Yang (December 1994), William Blume (June 1995), Kent Seamons (July 1995), Lawrence Rauchwerger (September 1995), Antonio Lain (October 1995), Henry Neeman (March 1996), Roman Waupotitsch (May 1996), Celso Mendes (May

1997), Paul Hovland (May 1997), Jason Hibbeler (May 1997), Yi Shang (August 1997), Tara Madhyastha (August 1997), J. Sreedhar (September 1997), Ying Chen (February 1998), Jay Hoeflinger (July 1998), James Bordner (April 1999), Szu-Wen Kuo (May 1999), Yong Cho (May 1999), Akhil Vidwans (June 1999), David Solt (June 1999), Jesus Izaguirre (August 1999), Boyana Norris (November 1999), Yuan Lin (February 2000), Alireza Namazifard (April 2000), Tao Wang (October 2000), George Almasi (June 2001), Ali Pinar (June 2001), Damrong Guoy (July 2001), Jason Hales (August 2001), Xiangmin Jiao, (November 2001), Milind Bhandarkar (May 2002), Kemal Aygun (June 2002), Nathan Crane (July 2002), Gang Zou (August 2002), Jin Young Kim (September 2002), Wing Fai Chow (December 2002), Jonghyun Lee (April 2003), Xiaosong Ma (July 2003), Vanessa Lopez (January 2004), Patrick O'Donoghue (November 2004), Orion Lawlor (November 2004), Terry Wilmarth (December 2004), Michael Parks (December 2004), Wei Wang (March 2005), David Hardy (May 2005), Gengbin Zheng (May 2005), Rebecca Hartman-Baker (June 2005), Eric Shaffer (July 2005), Shripad Thite (August 2005), Taras Pogorelov (December 2005), Christopher Siefert (January 2006), Ganesh Bikshandi (December 2006), Rajeev Jaiman (January 2007), Kalyana Nakshatrala (March 2007), Arun Prakash (April 2007), David Alber (April 2007), Hanna Neradt (May 2007), Jia Guo (August 2007), Shun Wang (September 2007), William Bell (July 2008), Andrew Colombi (August 2008), Daniel Turner (September 2008), Eric Cyr (September 2008), Michael Wolf (April 2009), William Cochran (May 2009), Chee Wai Lee (November 2009).

4. Undergraduate Advising

a. Currently academic advisor for 23 undergraduate students.

B. Research, Creative, and Other Scholarly Activities

1. Publications

a_1. Books Authored or Co-Authored, Original Editions

1. Heath, M. T., *Scientific Computing: An Introductory Survey*, McGraw-Hill, New York, 1997.

a_2. Books Authored or Co-Authored, Revisions

1. Heath, M. T., *Scientific Computing: An Introductory Survey*, Second Edition, McGraw-Hill, New York, 2002.

b_1. Books Edited or Co-Edited, Original Editions

1. Heath, M. T., editor, *Hypercube Multiprocessors 1986*, SIAM, Philadelphia, PA, 1986.
2. Heath, M. T., editor, *Hypercube Multiprocessors 1987*, SIAM, Philadelphia, PA, 1987.
3. Heath, M. T., V. Torczon, et al., editors, *Proc. Eighth SIAM Conf. on Parallel Processing for Scientific Computing*, SIAM, Philadelphia, PA, 1997.
4. Henderson, B., K. A. Yelick, et al., editors, Proc. Ninth SIAM Conf. on Parallel Processing for Scientific Computing, SIAM, Philadelphia, PA, 1999.

5. Heath, M. T., A. Ranade, and R. S. Schreiber, editors, *Algorithms for Parallel Processing*, Springer-Verlag, New York, 1999.

6. Heath, M. T., and A. Lumsdaine, editors, *Proc. Eighth ACM SIGPLAN Symp. on Principles and Practice of Parallel Programming*, ACM Press, New York, 2001.

c. Chapters in Books

1. George, A., and M. T. Heath, "Solution of Sparse Linear Least Squares Problems Using Givens Rotations," in *Large Scale Matrix Problems*, ed. by Å. Björck, R. J. Plemmons and H. Schneider, Elsevier North Holland, 1981, pp. 69–83.

2. Geist, G. A., M. T. Heath, and E. Ng, "Parallel Algorithms for Matrix Computations," in *The Characteristics of Parallel Algorithms*, ed. by R. Douglass, D. Gannon, and L. Jamieson, MIT Press, Cambridge, 1987, pp. 233–251.

3. Heath, M. T., "Parallel Computing: Perspectives and Prospects," in *Opportunities and Constraints of Parallel Computing*, ed. by J. L. C. Sanz, Springer-Verlag, New York, 1989, pp. 63–66.

4. George, A., M. T. Heath, J. Liu, and E. Ng, "Solution of Sparse Positive Definite Systems on a Hypercube," in *Parallel Algorithms for Numerical Linear Algebra*, ed. by H. A. Van der Vorst and P. Van Dooren, North Holland, Amsterdam, 1990, pp. 129–156.

5. Heath, M. T., E. Ng, and B. W. Peyton, "Parallel Algorithms for Sparse Linear Systems," in *Parallel Algorithms for Matrix Computations*, SIAM, Philadelphia, PA, 1990, pp. 83–124.

6. Heath, M. T., "Visualization of Parallel and Distributed Systems," in *Parallel and Distributed Computing Handbook*, ed. by A. Y. Zomaya, McGraw-Hill, New York, 1996, pp. 897–916.

7. Heath, M. T., "Parallel Direct Methods for Sparse Linear Systems," in *Parallel Numerical Algorithms*, ed. by D. E. Keyes, A. Sameh, and V. Venkatakrishnan, Kluwer Academic Publishers, Boston, 1997, pp. 55–90.

8. Heath, M. T., A. D. Malony, and D. T. Rover, "Visualization for Parallel Performance Evaluation and Optimization," in *Software Visualization: Programming as a Multimedia Experience*, ed. by J. Stasko, J. Domingue, M. H. Brown, and B. A. Price, MIT Press, Cambridge, MA, 1998, pp. 347–365.

9. Heath, M. T., and P. Raghavan, "Performance of Parallel Sparse Triangular Solution," in *Algorithms for Parallel Processing*, ed. by M. T. Heath, A. Ranade, and R. S. Schreiber, Springer-Verlag, New York, 1999, pp. 289–305.

10. Heath, M. T., and X. Jiao, "Parallel Methods and Software for Multicomponent Simulations," in *Parallel Processing for Scientific Computing*, ed. by M. A. Heroux, P. Raghavan and H. D. Simon, SIAM, Philadelphia, PA, 2006, pp. 341-355.

11. Golub, G. H., M. T. Heath, and G. Wahba, "Generalized Cross-Validation as a Method for Choosing a Good Ridge Parameter," in *Milestones in Matrix Computation*, ed. by R. H. Chan, C. Greif, and D. P. O'Leary, Oxford University Press, New York, 2007, pp. 202-212.

d. Monographs

1. Gallivan, K. A., M. T. Heath, E. Ng, J. M. Ortega, B. W. Peyton, R. J. Plemmons, C. H. Romine, A. H. Sameh, and R. G. Voigt, *Parallel Algorithms for Matrix Computations*, SIAM, Philadelphia, PA, 1990.

e_1. Articles in Journals

1. Haaland, C. M., and M. T. Heath, "Mapping of Population Density," *Demography*, Vol. 11, No. 2 (May 1974), pp. 321–336.

2. Golub, G. H., M. T. Heath, and G. Wahba, "Generalized Cross-Validation as a Method for Choosing a Good Ridge Parameter," *Technometrics*, Vol. 21, No. 2 (May 1979), pp. 215–223.

3. Chan, T. F., W. M. Coughran, E. H. Grosse, and M. T. Heath, "A Numerical Library and Its Support," *ACM Trans. Math. Software*, Vol. 6, No. 2 (June 1980), pp. 135–145.

4. George, A., and M. T. Heath, "Solution of Sparse Linear Least Squares Problems Using Givens Rotations," *Linear Algebra Appl.*, Vol. 34 (December 1980), pp. 69–83.

5. George, A., M. T. Heath, and R. J. Plemmons, "Solution of Large-Scale Sparse Least Squares Problems Using Auxiliary Storage," *SIAM J. Sci. Stat. Comput.*, Vol. 2, No. 4 (December 1981), pp. 416–429.

6. Heath, M. T., "Some Extensions of an Algorithm for Sparse Linear Least Squares Problems," *SIAM J. Sci. Stat. Comput.*, Vol. 3, No. 2 (June 1982), pp. 223–237.

7. George, A., M. T. Heath, and E. Ng, "A Comparison of Some Methods for Solving Sparse Linear Least Squares Problems," *SIAM J. Sci. Stat. Comput.*, Vol. 4, No. 2 (June 1983), pp. 177–187.

8. Heath, M. T., "Numerical Methods for Large Sparse Linear Least Squares Problems," *SIAM J. Sci. Stat. Comput.*, Vol. 5, No. 3 (September 1984), pp. 497–513.

9. Heath, M. T., R. J. Plemmons, and R. C. Ward, "Sparse Orthogonal Schemes for Structural Optimization Using the Force Method," *SIAM J. Sci. Stat. Comput.*, Vol. 5, No. 3 (September 1984), pp. 514–532.

10. George, A., M. T. Heath, and E. Ng, "Solution of Sparse Underdetermined Systems of Linear Equations," *SIAM J. Sci. Stat. Comput.*, Vol. 5, No. 4 (December 1984), pp. 988–997.

11. Grossman, G., and M. T. Heath, "Simultaneous Heat and Mass Transfer in Absorption of Gases in Turbulent Liquid Films," *Int. J. Heat Mass Transfer*, Vol. 27, No. 12 (December 1984), pp. 2365–2376.

12. Berry, M. W., M. T. Heath, I. Kaneko, M. Lawo, R. J. Plemmons, and R. C. Ward, "An Algorithm to Compute a Sparse Basis of the Null Space," *Numer. Math.*, Vol. 47, No. 4 (December 1985), pp. 483–504.

13. George, A., M. T. Heath, and J. Liu, "Parallel Cholesky Factorization on a Shared-Memory Multiprocessor," *Linear Algebra Appl.*, Vol. 77 (May 1986), pp. 165–187.

14. Heath, M. T., and D. C. Sorensen, "A Pipelined Givens Method for Computing the QR Factorization of a Sparse Matrix," *Linear Algebra Appl.*, Vol. 77 (May 1986), pp. 189–203.

15. Scott, D. S., M. T. Heath, and R. C. Ward, "Parallel Block Jacobi Eigenvalue Algorithms Using Systolic Arrays," *Linear Algebra Appl.*, Vol. 77 (May 1986), pp. 345–355.

16. George, A., M. T. Heath, J. Liu, and E. Ng, "Solution of Sparse Positive Definite Systems on a Shared-Memory Multiprocessor," *Internat. J. Parallel Programming*, Vol. 15, No. 4 (August 1986), pp. 309–325.

17. Heath, M. T., A. J. Laub, C. C. Paige, and R. C. Ward, "Computing the Singular Value Decomposition of a Product of Two Matrices," *SIAM J. Sci. Stat. Comput.*, Vol. 7, No. 4 (October 1986), pp. 1147–1159.

18. Laub, A. J., M. T. Heath, C. C. Paige, and R. C. Ward, "Computation of System Balancing Transformations and Other Applications of Simultaneous Diagonalization Algorithms," *IEEE Trans. Automatic Control*, Vol. AC-32, No. 2 (February 1987), pp. 115–122.

19. Gilbert, J. R., and M. T. Heath, "Computing a Sparse Basis for the Null Space," *SIAM J. Alg. Disc. Meth.*, Vol. 8, No. 3 (July 1987), pp. 446–459.

20. George, A., M. T. Heath, J. Liu, and E. Ng, "Symbolic Cholesky Factorization on a Local-Memory Multiprocessor," *Parallel Computing*, Vol. 5, Nos. 1 & 2 (July 1987), pp. 85–95.

21. George, A., M. T. Heath, J. Liu, and E. Ng, "Sparse Cholesky Factorization on a Local-Memory Multiprocessor," *SIAM J. Sci. Stat. Comput.*, Vol. 9, No. 2 (March 1988), pp. 327–340.

22. Heath, M. T., and C. H. Romine, "Parallel Solution of Triangular Systems on Distributed-Memory Multiprocessors," *SIAM J. Sci. Stat. Comput.*, Vol. 9, No. 3 (May 1988), pp. 558–588.

23. Eisenstat, S. C., M. T. Heath, C. S. Henkel, and C. H. Romine, "Modified Cyclic Algorithms for Solving Triangular Systems on Distributed-Memory Multiprocessors," *SIAM J. Sci. Stat. Comput.*, Vol. 9, No. 3 (May 1988), pp. 589–600.

24. George, A., M. T. Heath, J. Liu, and E. Ng, "Solution of Sparse Positive Definite Systems on a Hypercube," *J. Comp. Appl. Math.*, Vol. 27, Nos. 1 & 2 (September 1989), pp. 129–156.

25. Heath, M. T., G. A. Geist, and J. B. Drake, "Early Experience with the Intel iPSC/860 at Oak Ridge National Laboratory," *Internat. J. Supercomput. Appl.*, Vol. 5, No. 2 (Summer 1991), pp. 10–26.

26. Heath, M. T., E. Ng, and B. W. Peyton, "Parallel Algorithms for Sparse Linear Systems," *SIAM Review*, Vol. 33, No. 3 (September 1991), pp. 420–460.

27. Heath, M. T., and J. A. Etheridge, "Visualizing the Performance of Parallel Programs," *IEEE Software*, Vol. 8, No. 5 (September 1991), pp. 29–39.

28. Demmel, J. W., M. T. Heath, and H. A. van der Vorst, "Parallel Numerical Linear Algebra," *Acta Numerica*, Vol. 2, (1993), pp. 111–197.

29. Karp, A. H., M. Heath, D. Heller, and H. Simon, "1994 Gordon Bell Prize Winners," *IEEE Computer*, Vol. 28, No. 1 (January 1995), pp. 68–74.

30. Heath, M. T., and P. Raghavan, "A Cartesian Parallel Nested Dissection Algorithm," *SIAM J. Matrix Anal. Appl.*, Vol. 16, No. 1 (January 1995), pp. 235–253.

31. Heath, M. T., A. D. Malony, and D. T. Rover, "The Visual Display of Parallel Performance Data," *IEEE Computer*, Vol. 28, No. 11 (November 1995), pp. 21–28.

32. Heath, M. T., A. D. Malony, and D. T. Rover, "Parallel Performance Visualization: From Practice to Theory," *IEEE Parallel Distrib. Tech.*, Vol. 3, No. 4 (Winter 1995), pp. 44–60.

33. Karp, A. H., M. Heath, and A. Geist, "1995 Gordon Bell Prize Winners," *IEEE Computer*, Vol. 29, No. 1 (January 1996), pp. 79–85.

34. Heath, M. T., and P. Raghavan, "Performance of a Fully Parallel Sparse Solver," *Internat. J. Supercomput. Appl. High Perf. Comput.*, Vol. 11, No. 1, (Spring 1997), pp. 49–64.

35. Nasir, M. A., W. C. Chew, P. Raghavan, and M. T. Heath, "A Comparison of Computational Complexities of HFEM and ABC Based Finite Element Methods," *J. Electromagnetic Waves Appl.*, Vol. 11, (1997), pp. 1601–1617.

36. Heath, M. T. and W. A. Dick, "Virtual Rocketry: Rocket Science Meets Computer Science," *IEEE Comput. Sci. Engr.*, Vol. 5, No. 1 (January-March 1998), pp. 16–26.

37. Heath, M. T. and W. A. Dick, "Virtual Prototyping of Solid Propellant Rockets," *Comput. Sci. Engr.*, Vol. 2, No. 2 (March-April 2000), pp. 21–32.

38. Jiao, X., and M. T. Heath, "Overlaying Surface Meshes, Part I: Algorithms," *Internat. J. Comput. Geom. Appl.*, Vol. 14, No. 6 (December 2004), pp. 379-402.

39. Jiao, X., and M. T. Heath, "Overlaying Surface Meshes, Part II: Topology Preservation and Feature Matching," *Internat. J. Comput. Geom. Appl.*, Vol. 14, No. 6 (December 2004), pp. 403-419.

40. Jiao, X., and M. T. Heath, "Common-Refinement-Based Data Transfer between Non-matching Meshes in Multiphysics Simulations," *Internat. J. Numer. Meth. Engrg.*, Vol. 61, No. 14 (December 2004), pp. 2402-2427.

41. Lopez, V., P. Boyland, M. T. Heath, and R. D. Moser, "Relative Periodic Solutions of the Complex Ginzburg-Landau Equation," *SIAM J. Appl. Dynamical Systems*, Vol. 4, No. 4 (2005), pp. 1042-1075.

42. Sahinidis, N. V., M. T. Harandi, M. T. Heath, L. Murphy, M. Snir, R. P. Wheeler, and C. F. Zukoski, "Establishing a Master's Degree Programme in Bioinformatics: Challenges and Opportunities," *IEE Proc. Syst. Biol.*, Vol. 152, No. 4 (December 2005), pp. 269-275.

43. Jiao, X., G. Zheng, P. A. Alexander, M. T. Campbell, O. S. Lawlor, J. Norris, A. Haselbacher, and M. T. Heath, "A System Integration Framework for Coupled Multiphysics Simulations," *Engineering with Computers*, Vol. 22, No. 3-4 (December 2006), pp. 293-309.

44. Gates, M. R., K. Matous, and M. T. Heath, "Asynchronous Multi-Domain Variational Integrators for Non-Linear Problems," *Internat. J. Numer. Meth. Engrg.*, Vol. 76, (June 2008), pp. 1353-1378.

45. Wolf, M. M., and M. T. Heath, "Combinatorial Optimization of Matrix-Vector Multiplication in Finite Element Assembly," SIAM J. Sci. Comput., Vol. 31, No. 4 (July 2009), pp. 2960-2980.

e_2. Articles in Conference Proceedings

1. George, A., G. H. Golub, M. T. Heath, and R. J. Plemmons, "Least Squares Adjustment of Large-Scale Geodetic Networks by Orthogonal Decomposition," Proc. Symp. on Geodetic Networks and Computations, Munich, Germany, 1981.

2. Berry, M. W., M. T. Heath, R. J. Plemmons, and R. C. Ward, "Orthogonal Schemes for Structural Optimization," Trans. First Army Conf. Appl. Math. Comput., Army Research Office Rept. 84-1, February 1984, pp. 477–485.

3. Heath, M. T., "Sparse Matrix Computations," Proc. 23rd IEEE Conf. on Decision and Control, Las Vegas, Nevada, December 1984, pp. 662–665.

4. Heath, M. T., "The Hypercube: A Tutorial Overview," Hypercube Multiprocessors 1986, SIAM, Philadelphia, 1986, pp. 7–10.

5. Geist, G. A., and M. T. Heath, "Matrix Factorization on a Hypercube Multiprocessor," Hypercube Multiprocessors 1986, SIAM, Philadelphia, 1986, pp. 161–180.

6. Heath, M. T., "Hypercube Applications at Oak Ridge National Laboratory," Hypercube Multiprocessors 1987, SIAM, Philadelphia, 1987, pp. 395–417.

7. Henkel, C. S., M. T. Heath, and R. J. Plemmons, "Cholesky Downdating on a Hypercube," Proc. Third Conf. Hypercube Concurrent Comput. Appl., ACM, New York, 1988, pp. 1592–1598.

8. George, A., M. T. Heath, J. Liu, and E. Ng, "Sparse Cholesky Factorization on a Local-Memory Multiprocessor," Parallel Processing and Medium-Scale Multiprocessors, SIAM, Philadelphia, 1989, pp. 58–75.

9. Geist, G. A., M. T. Heath, B. W. Peyton, and P. H. Worley, "A Machine-Independent Communication Library," Proc. Fourth Conf. Hypercubes, Concurrent Comput. Appl., Golden Gate Enterprises, Los Altos, CA, 1990, pp. 565–568.

10. Heath, M. T., "Visual Animation of Parallel Algorithms for Matrix Computations," Proc. Fifth Distributed Memory Comput. Conf., IEEE Computer Soc. Press, Los Alamitos, CA, 1990, pp. 1213–1222.

11. Worley, P. H., and M. T. Heath, "Performance Characterization Research at Oak Ridge National Laboratory," Proc. Fourth SIAM Conf. Parallel Processing Sci. Comput., SIAM, Philadelphia, PA, 1990, pp. 431–436.

12. Heath, M. T., "Mathematical Software," System Software and Tools for High Performance Computing Environments, SIAM, Philadelphia, 1993, pp. 35–50.

13. Heath, M. T., "Recent Developments and Case Studies in Performance Visualization Using ParaGraph," Performance Measurement and Visualization of Parallel Systems, Elsevier Science Publishers, Amsterdam, 1993, pp. 175–200.

14. Heath, M. T., and P. Raghavan, "Distributed Solution of Sparse Symmetric Positive Definite Systems," Proc. Scalable Parallel Libraries Conf., IEEE Computer Soc. Press, Los Alamitos, CA, 1994, pp. 114–122.

15. Heath, M. T., and P. Raghavan, "Performance of a Fully Parallel Sparse Solver," Proc. Scalable High Performance Comput. Conf., IEEE Computer Soc. Press, Los Alamitos, CA, 1994, pp. 334–341.

16. Heath, M. T., "Performance Visualization with ParaGraph," Proc. Second Workshop on Environments and Tools for Parallel Sci. Comput., SIAM, Philadelphia, 1994, pp. 221–230.

17. Nasir, M. A., W. C. Chew, P. Raghavan, and M. T. Heath, "O(1.5) Solution of Hybrid FEM Problems," Proc. IEEE Antennas and Propagation Soc. Internat. Symp., 1994, Vol. 1, pp. 447–450.

18. Jiao, X., H. Edelsbrunner, and M. T. Heath, "Mesh Association: Formulation and Algorithms," Proc. 8th International Meshing Roundtable, Lake Tahoe, CA, October 1999.

19. Pinar, A., and M. T. Heath, "Improving Performance of Sparse Matrix-Vector Multiplication," Proc. Supercomputing 99, Portland, OR, November 1999.

20. Heath, M. T, R. A. Fiedler, and W. A. Dick, "Simulating Solid Propellant Rockets at CSAR," AIAA 2000-3455, 36th AIAA/ASME/SAE/ASEE Joint Propulsion Conf., Huntsville, AL, July 2000.

21. Dick, W. A., R. A. Fiedler, and M. T. Heath, "Integrated Simulation of Solid Propellant Rockets," Second European Conference on Launcher Technology, Centre National d'Etudes Spatiales, Rome, Italy, November 2000.

22. Dick, W. A., M. T. Heath, and R. A. Fiedler, "Integrated 3-D Simulation of Solid Propellant Rockets," AIAA 2001-3949, 37th AIAA/ASME/SAE/ASEE Joint Propulsion Conf., Salt Lake City, UT, July 2001.

23. Jiao, X., and M. T. Heath, "Efficient and Robust Algorithm for Overlaying Surface Meshes," Proc. 10th International Meshing Roundtable, Newport Beach, CA, October 2001.

24. Jiao, X., and M. T. Heath, "Feature Detection for Surface Meshes," Proc. 8th International Conf. on Numerical Grid Generation in Computational Field Simulation, Honolulu, HI, June 2002.

25. Dick, W. A., and M. T. Heath, "Whole System Simulation of Solid Propellant Rockets," AIAA 2002-4345, 38th AIAA/ASME/SAE/ASEE Joint Propulsion Conf., Indianapolis, IN, July 2002.

26. Lopez, V., P. Boyland, M. Heath, and R. Moser, "Relative Time-Periodic Solutions of the Complex Ginzburg-Landau Equation," SIAM Conf. Appl. Dynamical Systems, Snowbird, UT, May 2003.

27. Jiao, X., M. T. Campbell, and M. T. Heath, "Roccom: An Object-Oriented, Data Centric Software Integration Framework for Multiphysics Simulations," 17th Ann. ACM Internat. Conf. Supercomputing, San Francisco, CA, June 2003.

28. Jiao, X., and M. T. Heath, "Accurate, Conservative Data Transfer Between Nonmatching Meshes in Multiphysics Simulations," 7th U.S. National Congress on Computational Mechanics, Albuquerque, NM, July 2003.

29. Heath, M. T., and X. Jiao, "Parallel Computational Methods in Multicomponent Systems," Proc. 11th SIAM Conf. Parallel Processing for Scientific Computing, San Francisco, CA, February 2004.

30. Heath, M. T., and X. Jiao, "Parallel Simulation of Multicomponent Systems," VECPAR 2004: 6th Internat. Conf. on High Performance Computing for Computational Science, Valencia, Spain, June 2004, pp. 496–513.

31. Heath, M. T., and X. Jiao, "Academic Challenges in Coupling Large-Scale Multiphysics Simulations," Internat. Conf. Computational Science, Atlanta, Georgia, May 2005.

32. Dick, W. A., M. T. Heath, R. A. Fiedler, and M. D. Brandyberry, "Advanced Simulation of Solid Propellant Rockets from First Principles," AIAA 2005-3990, 41st AIAA/ASME/SAE/ASEE Joint Propulsion Conf., Tucson, AZ, July 2005.

33. Jiao, X., G. Zheng, O. S. Lawlor, P. J. Alexander, M. T. Campbell, M. T. Heath and R. A. Fiedler, "An Integration Framework for Simulations of Solid Rocket Motors," AIAA 2005-3991, 41st AIAA/ASME/SAE/ASEE Joint Propulsion Conf., Tucson, AZ, July 2005.

34. Dick, W. A., and M. T. Heath, "SP Rocket Simulations at CSAR," ISTS 2006-a-28, Proc. 25th International Symposium on Space Technology and Science, Kanazawa, Japan, June 2006.

35. Dick, W. A., R. A. Fiedler, and M. T. Heath, "High-fidelity Simulation of Solid Propellant Rockets," ISTS 2006-a-27, Proc. 25th International Symposium on Space Technology and Science, Kanazawa, Japan, June 2006.

36. Dick, W. A, and M. T. Heath, "Building *Rocstar*: Simulation Science for Solid Propellant Rocket Motors," AIAA 2006-4590, 42nd AIAA/ASME/SAE/ASEE Joint Propulsion Conf., Sacramento, CA, July 2006.

f. Publications in above categories that have been submitted but not yet accepted

g. Other

Bulletins or Reports (selected list not duplicating items listed elsewhere)

1. Funderlic, R. E., and M. T. Heath, "Linear Compartmental Analysis of Ecosystems," Tech. Rept. ORNL-IBP-71-4, Oak Ridge National Laboratory, August 1971.

2. Heath, M. T., "The Numerical Solution of Ill-Conditioned Systems of Linear Equations," Tech. Rept. ORNL-4957, Oak Ridge National Laboratory, April 1974.

3. Chan, T. F., M. T. Heath, W. M. Coughran, and F. T. Luk, "Numerical Analysis Program Library User's Guide," User Note 82, Stanford Linear Accelerator Center Computing Services, Stanford Center for Information Processing, October 1975.

4. Heath, M. T., "Numerical Algorithms for Nonlinearly Constrained Optimization," Tech. Rept. STAN-CS-78-656, Dept. of Computer Science, Stanford University, April 1978.

5. Heath, M. T., editor, "Sparse Matrix Software Catalog," Oak Ridge National Laboratory, October 1982.

6. Heath, M. T., "Parallel Cholesky Factorization in Message-Passing Multiprocessor Environments," Tech. Rept. ORNL-6150, Oak Ridge National Laboratory, May 1985.

7. Geist, G. A., and M. T. Heath, "Parallel Cholesky Factorization on a Hypercube Multiprocessor," Tech. Rept. ORNL-6190, Oak Ridge National Laboratory, August 1985.

8. Heath, M. T., "Parallel Computing at ORNL," *Oak Ridge National Laboratory Review*, Vol. 18, No. 4 (1985), pp. 1–7.

9. Heath, M. T., "Supercomputer Research and Development Requirements for Army Sponsored Independent Research Center," white paper prepared for U.S. Army Research Office, 1987.

10. Bailey, D., E. Brooks, J. Dongarra, A. Hayes, M. Heath, and G. Lyon, "Benchmarks to Supplant Export FPDR Calculations," Tech. Rept. NBSIR 88-3795, Institute for Computer Sciences and Technology, National Bureau of Standards, Gaithersburg, MD, June 1988.

11. Heath, M. T., and C. H. Romine, "A Consumer's Guide to Advanced Computer Architectures," white paper prepared for U.S. Army Research Office, 1989.

12. Geist, G. A., M. T. Heath, B. W. Peyton, and P. H. Worley, "PICL: A Portable Instrumented Communication Library, C Reference Manual," ORNL/TM-11130, Oak Ridge National Laboratory, July 1990.

13. Geist, G. A., M. T. Heath, B. W. Peyton, and P. H. Worley, "A Users' Guide to PICL: A Portable Instrumented Communication Library," ORNL/TM-11616, Oak Ridge National Laboratory, September 1990.

14. Ostrouchov, L. S., M. T. Heath, and C. H. Romine, "Modeling Speedup in Parallel Sparse Matrix Factorization," ORNL/TM-11786, Oak Ridge National Laboratory, March 1991.

15. Heath, M. T., and J. A. Etheridge, "Visualizing Performance of Parallel Programs," ORNL/TM-11813, Oak Ridge National Laboratory, May 1991.

16. Heath, M. T., and P. Raghavan, "Distributed Solution of Sparse Linear Systems," UIUC-DCS-1793, Dept. of Computer Science, University of Illinois at Urbana-Champaign, February 1993.

17. Sterling, T., P. Messina, M. T. Heath, et al., "System Software and Tools for High Performance Computing Environments," Publication 93-15, Jet Propulsion Laboratory, Pasadena, California, April 1993.

18. Hovland, P., and M. T. Heath, "Adaptive SOR: A Case Study in Automatic Differentiation of Algorithm Parameters," Preprint ANL/MCS-P673-0797, Mathematics and Computer Science Division, Argonne National Laboratory, Argonne, Illinois, July 1997.

19. Heath, M. T., "Whole-System Simulation of Solid Rockets Is Goal of ASCI Center at Illinois," *SIAM News*, Vol. 31, No. 4 (May 1998), pp. 1, 8.

Software

Professor Heath is principal developer or co-developer of the following software packages. They have been developed under funding from the U.S. Government and are freely distributed via the Internet.

- CAPSS (CArtesian Parallel Sparse Solver) is a software package for solving large sparse systems of linear equations on distributed-memory, message-passing multicomputers. All phases of the computation, including ordering, symbolic and numeric factorization, and triangular solution, are performed in parallel. See `www.netlib.org/scalapack/capss.tgz`.
- ParaGraph provides graphical animation of parallel program behavior and graphical depiction of numerous measures of parallel performance, such as processor utilization, communication traffic, and load balance. See `www.csar.uiuc.edu/software/paragraph/`.
- PICL (Portable Instrumented Communication Library) provides portability among various distributed-memory multicomputers as well as detailed trace data on parallel execution. See `www.csm.ornl.gov/picl/`.
- Interactive Educational Modules in Computational Science demonstrate the basic concepts and algorithms of scientific computing. See `www.cse.uiuc.edu/iem/`.

2. Grants, Contracts and Gifts Received

a. For Research

Years	Title	Agency	PI/Co-PI	Amount
1991–1998	Scalable Parallel Libraries	DARPA	PI	$950,000
1997–2002	Center for Simulation of Advanced Rockets	DOE	PI	$20,250,000
1998–2001	Utilization of Advanced Intel-Based Platforms	Intel	PI	$3,900,000
1998–2001	Simulation and Optimization of Casting and Extrusion Processes	NSF/ DARPA	Co-PI	$2,100,000
1998–2001	Integrated Computational Environment for Studying Ion Movement in Biological Systems	NSF	Co-PI	$1,100,000
2002–2010	Center for Simulation of Advanced Rockets	DOE	PI	$26,550,000
2003–2006	Robust Lagrangian Surface Propagation with Topological Control	NSF	Co-PI	$400,000
2006–2008	Meshing Collaboration	Boeing	PI	$126,477
2006–2008	Massive Parallelization of xFD	Caterpillar	PI	$190,000
2008–2010	Cloud Computing Testbed	NSF/Yahoo/Intel	PI	$560,000

b. For Instruction

Years	Title	Agency	PI/Co-PI	Amount
2000-2002	Interactive Modules in Computational Science	NSF/NCSA	PI	$60,000

3. Areas of Research

Professor Heath's general areas of research are in large-scale scientific computing, numerical analysis, and parallel computing. His primary research interests are in numerical linear algebra in general, and sparse matrix computations in particular. He also has significant research interests in parallel performance visualization, parallel programming environments, numerical optimization, and mathematical software.

4. Graduate Thesis Research Advising

Year	M.S. Thesis Student	Employment
1990	Susan Blackford	Myricom, Inc.
1994	Robert Gjertsen	IBM Austin
1995	Paulo Figueiredo	Petrobras
1995	Robert Block	Sun Microsystems
1996	Minghorng Lai	unknown
1996	Jesus Izaguirre	University of Notre Dame
2007	Mark Gates	PhD student, UIUC

Year	Ph.D. Thesis Student	Employment
1996	Henry Neeman	University of Oklahoma
1997	Jason Hibbeler	IBM Williston, VT
1997	Paul Hovland	Argonne National Laboratory
1999	Akhil Vidwans	Google, Inc.
2000	Boyana Norris	Argonne National Laboratory
2001	Ali Pinar	Sandia National Laboratories
2001	Xiangmin Jiao	SUNY Stony Brook
2004	Vanessa Lopez	IBM T. J. Watson Research Center
2005	Rebecca Hartman-Baker	Oak Ridge National Laboratory
2007	Hanna Neradt	
2009	Michael Wolf	
2009	William Cochran	
2010	Mark Gates	
2011	Russell Hewett	
2011	Adam Reichert	

5. Editorships of Journals or Other Learned Publications

- Editorial Board, SIAM News, 1988–present.
- Editorial Board, SIAM Journal on Scientific Computing, 1990–1995.
- Editorial Board, International Journal of High Performance Computing Applications, 1993–present.
- Editoral Board, SIAM Review, 1994–2002.
- Editorial Board, SIAM Fundamentals of Algorithms, 2003–present.

6. Postdoctoral Associates and Visiting Scientists

- Dr. Elizabeth Jessup, USA, 1989-1991, now Professor, Dept. of Computer Science, University of Colorado.
- Dr. Padma Raghavan, India, 1991–1994, now Professor, Dept. of Computer Science and Engineering, Pennsylvania State University.
- Dr. Damrong Guoy, Thailand, 2001–2004, now Research Scientist, University of Illinois at Urbana-Champaign.

- Dr. Xiangmin Jiao, China, 2001–2004, now Assistant Professor, State University of New York at Stony Brook.
- Dr. Vanessa Lopez, Puerto Rico, 2004, now Research Staff Member, IBM T. J. Watson Research Center.
- Dr. Eric Shaffer, USA, 2005–2007, now Research Scientist, University of Illinois at Urbana-Champaign.

7. Other Scholarly Activities

Conference Committee Memberships:

- Sparse Matrix Symposium, Fairfield Glade, Tennessee, 1982.
- Conference on Hypercube Multiprocessors (Chair), Knoxville, Tennessee, 1985.
- Conference on Hypercube Multiprocessors (Chair), Knoxville, Tennessee, 1986.
- Hypercube Concurrent Computers and Applications, Pasadena, California, 1988.
- Hypercube Concurrent Computers and Applications, Monterey, California, 1989.
- Distributed-Memory Computing Conference, Charleston, South Carolina, 1990.
- International Conference on Supercomputing, Amsterdam, Netherlands, 1990.
- Distributed-Memory Computing Conference, Portland, Oregon, 1991.
- International Conference on Supercomputing, Cologne, Germany, 1991.
- Scalable High Performance Computing Conference, Williamsburg, Virginia, 1992.
- HPCC Grand Challenge Applications Workshop, Pittsburgh, Pennsylvania, 1993.
- Supercomputing 94, Washington DC, 1994.
- Fifth Symposium on Frontiers of Massively Parallel Computation (Co-chair for algorithms), McLean, Virginia, 1995.
- International Parallel Processing Symposium, Santa Barbara, California, 1995.
- IMA Workshop on Algorithms for Parallel Processing (Co-chair), Minneapolis, Minnesota, 1996.
- Eighth SIAM Conference on Parallel Processing for Scientific Computing (Co-chair), Minneapolis, Minnesota, 1997.
- Sixth ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming, Las Vegas, Nevada, 1997.
- Seventh IEEE Symposium on Frontiers of Massively Parallel Computation, Annapolis, Maryland, 1999.
- Ninth SIAM Conference on Parallel Processing for Scientific Computing, San Antonio, Texas, 1999.

- SIAM Conference on Computational Science and Engineering, Washington, DC, 2000.
- Tenth SIAM Conference on Parallel Processing for Scientific Computing, Norfolk, Virginia, 2001.
- Eighth ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming (General Chair), Snowbird, Utah, 2001.
- SIAM Workshop on Computational Sciences & Engineering, Mathematics, and Computer Sciences, Arlington, Virginia, 2003.
- SIAM Conference on Parallel Processing for Scientific Computing, San Francisco, California, 2006.
- VECPAR 2006: 7th International Meeting on High Performance Computing for Computational Science, Rio de Janeiro, Brazil, 2006.

C. Service

1. Professional Society

- Board of Directors, 1985–1993, and Vice-Chair, 1989–1993, ACM Special Interest Group on Numerical Mathematics (SIGNUM).
- Vice-Chair, 1989–1992, SIAM Activity Group on Linear Algebra.
- Vice-Chair, 1994–1996, SIAM Activity Group on Supercomputing.
- Chair, 1997–1999, SIAM Activity Group on Supercomputing.
- Member, 2004–present, SIAM Council.

2. University

- Numerical Analysis Area Committee, Dept. of Computer Science, 1991–present, Chair, 2004–present.
- Distinguished Lecturer Committee, Dept. of Computer Science, 1992–1996.
- Computational Science and Engineering Steering Committee, College of Engineering, 1993–1996.
- Computational Science and Engineering Committee, Dept. of Computer Science, 1993–present.
- Graduate Studies Committee, Dept. of Computer Science, 1994–1998.
- Advisory Committee, Dept. of Computer Science, 1994–1998, 2001–2004.
- Head Search Committee for Dept. of Computer Science, 1995.
- Strategic Planning Committee, Dept. of Computer Science, 1996–1998.
- Recruiting Committee, Dept. of Computer Science, 1996–1998.

- Teaching Evaluation and Improvement Subcommittee, College of Engineering, 1995–1996.
- Engineering Workstation Steering Committee, College of Engineering, 1995–2000, Chair, 1996–2000.
- Administrative Committee, College of Engineering, 1996–present.
- George and Ann Fisher Professorship Search Committee, Dept. of Electrical and Computer Engineering, 1997.
- Task Force on Biotechnology, College of Engineering, 1998–1999.
- Fellowships, Assistantships and Admissions Committee, Dept. of Computer Science, 1999–2000.
- Graduate College Fellowship Board, 1999–2002.
- Undergraduate Advisor, Dept. of Computer Science, 2000–2007.
- Faiman-Muroga Professorship Search Committee (Chair), Dept. of Computer Science, 2000-2001.
- Committee for MS Option in Bioinformatics (Chair), Dept. of Computer Science, 2002–2003.
- Bioinformatics Steering Committee, Graduate College, 2002–2006.
- Advisory Committee on Endowed Appointments, College of Engineering, 2002–2006, Chair, 2005–2006.
- Options-Defining Committee for Mechanics (Chair), College of Engineering, 2003. Science, 2002–2003.
- Research Computing Advisory Board (Chair), Campus Information Technologies and Educational Services, 2004.
- NCSA Director Search Committee, 2004.
- College of Engineering Dean Search Committee, 2005.
- Committee on Illinois Preeminence in Computing, 2005-2006.
- Search Committee for Faculty in Fluid Mechanics (Chair), College of Engineering, 2005-2006.
- Advisory Committee for the Institute for Advanced Computing Applications and Technologies, 2005-present.
- Steering Committee for the Illinois Informatics Initiative, 2006-present.

3. Federal and State

- Selection Panel, NSF Science and Technology Centers program, 1990.
- Selection Panel, NSF Young Investigator awards, 1990, 1994.

- Review Committee for DOE High Performance Computing activities at Fermi National Accelerator Laboratory, 1991.
- Working Group Chair, NASA Workshop on Software for Parallel Systems, 1992.
- Advisory Committee, DOE High Performance Computing Research Centers at Los Alamos National Laboratory and Oak Ridge National Laboratory, 1992–1996.
- Scientific Review Committee, Mathematics and Computer Science Division, Argonne National Laboratory, 1992–1998, Chair, 1998.
- Panel of Judges, Gordon Bell Prizes in High Performance Computing, 1994–95.
- Committee of Visitors, NSF Division of Computer and Computation Research, 1996.
- Participant in Congressional Science Day, Washington DC, 2000.
- Computation Directorate Review Committee, Lawrence Livermore National Laboratory, 2003–2004.
- Chair, Director's Review Committee for Computing Sciences, Lawrence Berkeley National Laboratory, 2005.
- Advanced Scientific Computing Advisory Committee Balance Panel, U.S. Department of Energy, 2007–2008.

Improvement Activities

- Dean's Seminars on teaching improvement, College of Engineering, University of Illinois at Urbana-Champaign.
- Senior Administrator Orientation, Allerton Park and Conference Center, August, 1997.
- Provost's Administrative Seminar Series, University of Illinois at Urbana-Champaign.
- Certificate in Business Administration, Executive Development Center, University of Illinois at Urbana-Champaign, March 1998.