

# Ken Kennedy

*John and Ann Doerr University Professor  
Department of Computer Science  
Rice University*

*November 20, 2006*

## **Born:**

August 12, 1945, Washington, DC

## **Education:**

B.A., Rice University, 1967 (Mathematics, Summa Cum Laude)  
M.S., New York University, 1969 (Mathematics)  
Ph.D., New York University, 1971 (Computer Science)  
(Thesis advisors: Jacob T. Schwartz and John Cocke)

## **Honors:**

- Phi Beta Kappa, 1965
- Hugh Scott Cameron Award for Service to Rice University, 1967
- Woodrow Wilson National Fellow, 1967-68
- National Science Foundation Graduate Fellow, 1968-71
- New York University Founders Day Award for Academic Achievement, 1972
- Jones College Service Award (Rice University), 1976
- George R. Brown Award for Superior Teaching (Rice University), 1979
- National Academy of Engineering, 1990
- Fellow, American Association for the Advancement of Science, 1994
- Fellow, Institute of Electrical and Electronics Engineers, 1994
- Fellow, Association for Computing Machinery, 1995
- W. Wallace McDowell Award for Contributions to Compiler Optimization and Leadership in Software Development for Parallel Computation, 1995
- ACM SIGPLAN Programming Languages Achievement Award for a Significant and Lasting Contribution to the Field of Programming Languages, 1999
- CRA Distinguished Service Award for Leadership of PITAC and the National Effort to Raise the Profile of Information Technology, 1999
- Third Annual Seymour Cray HPC Industry Recognition Award for the 1999 Accomplishments of the President's Information Technology Advisory Committee (PITAC), 1999
- Distinguished Alumnus Award, Rice University, 2002
- Computerworld Honors 2004 Medal of Achievement for Rice University Center for High Performance Software Research (HiPerSoft)
- Finalist for a Computerworld 2004 21<sup>st</sup> Century Achievement Award in the category of Science (for HiPerSoft)
- American Academy of Arts and Sciences, 2005

## Faculty Positions:

- 1971–76 Assistant Professor, Department of Mathematical Sciences, Rice University.
- 1976–80 Associate Professor, Department of Mathematical Sciences, Rice University.
- 1980–84 Professor, Department of Mathematical Sciences, Rice University.
- 1982–84 Chair, Computer Science Program Committee, Rice University.
- 1984–88 Chair, Department of Computer Science, Rice University.
- 1985–97 Noah Harding Professor, Department of Computer Science, Rice University.
- 1985–86 Visiting Professor, Department of Computer Science, Stanford University.
- 1986–92 Director, Computer and Information Technology Institute, Rice University.
- 1989–2000 Director, Center for Research on Parallel Computation, Rice University.
- 1990–92 Chair, Department of Computer Science, Rice University.
- 1997– Distinguished Adjunct Professor, Computer Science Department, University of Houston.
- 1997– John and Ann Doerr Professor of Computational Engineering in the Department of Computer Science at Rice University.
- 2000– Director, Center for High Performance Software Research, Rice University.
- 2002– University Professor, Rice University.
- 2003– Co-Director, Gulf Coast Center for Computational Cancer Research, Rice University and M. D. Anderson Cancer Center

## Non-Faculty Positions:

- 1974– Editorial Board, *International Journal of Computer Mathematics*.
- 1974–81 Vice President, R. M. Thrall and Associates, Incorporation.
- 1975–77 Member, National Science Foundation, Division of Computer Research, Panel on Computer Science and Engineering Research (COSERS), Programming Languages and Implementation Sub-Area.
- 1975–76 Visiting Scientist, NASA Space Shuttle Program Lead Office.
- 1977– Visiting Staff Member, Computer Division, Los Alamos Scientific Laboratory.
- 1978–79 Sabbatical leave from Rice: Visiting Scientist, Department of Computer Science, IBM Thomas J. Watson Research Center, Yorktown Heights, NY.
- 1979– Consultant, IBM Thomas J. Watson Research Center, Yorktown Heights, NY.
- 1981–81 Member, Program Committee, ACM Principles of Programming Languages Conference.
- 1982–82 Member, Program Committee, ACM SIGPLAN National Conference.
- 1983–83 Chair, Program Committee, ACM Principles of Programming Languages Conference.
- 1983–85 Member, ACM Software System Award Committee.
- 1984–85 Chair, ACM Software System Award Committee.
- 1984–85 Member, Program Committee, ACM SIGPLAN National Conference.
- 1984–86 Member, CSNET Executive Committee.
- 1984–88 Member, NSF Advisory Committee for Computer Research.
- 1984– Consultant, Los Alamos National Laboratory.

1985–87 Chair, NSF Advisory Committee for Computer Research.  
1985– Consultant, Lawrence Livermore National Laboratory.  
1986–91 Member, Board of the Computing Research Association.  
1986–92 Section Editor for Languages and Programs, *The Journal of Supercomputing*.  
1986– Member, Board of Directors, Houston Society for the Performing Arts.  
1987–94 Consultant, Convex Computer Corporation.  
1987–97 Vice President (Artistic Advisory), Houston Society for the Performing Arts.  
1988– Editorial Board, Subject Area Editor in Program Transformations, *Journal of Parallel and Distributed Computing*.  
1989– Editorial Board, *Concurrency: Practice and Experience*.  
1989–94 Editorial Board, *ACM Transactions on Software Engineering and Methodology*.  
1990–93 Member, Executive Committee, W. F. Keck Center for Computational Biology.  
1990–94 External Advisory Board, Center for the Analysis and Prediction of Storms.  
1990– Member, Board of Directors, Tera Computer Corporation. (Now Cray, Inc.)  
1990– Consultant, Houston Venture Partners.  
1991–91 Program Chair, Supercomputing '91.  
1991–93 Member, Computer Science and Telecommunications Board, National Research Council.  
1991–92 Member, High Performance Computing and Communications Sub-Panel, The President's Council of Advisors on Science and Technology.  
1991–97 Chair, High Performance Fortran Forum.  
1992–92 Conference Chair, International Conference on Supercomputing '92.  
1993–96 Chair, Committee for the Workshop Series on High Performance Computing and Communications, Computer Science and Telecommunications Board, National Research Council.  
1993–97 Member, Rice University Computational Engineering Building Campaign Committee.  
1994–95 Vice Chair, Computer Science and Telecommunications Peer Committee, National Academy of Engineering.  
1994–95 Member, Advisory Panel for Commercialization of Emerging Technologies, Office of Technology Assessment, U. S. Congress.  
1994–98 Member, Board of Directors, Access Ware Inc.  
1995 Chair, National Compiler Infrastructure Workshops, DARPA/NSF.  
1995–96 Chair, Computer Science and Telecommunications Peer Committee National Academy of Engineering.  
1995–97 Member, Information, Science, and Technology Study Group—An Advisory Committee to the Advanced Research Projects Agency.  
1995–97 Member, Advisory Committee, National Science Foundation Computer and Information Science and Engineering Directorate.  
1995–97 Member, Commission on Physical Sciences, Mathematics, and Applications, National Research Council.  
1996–98 Member, Committee on Membership, National Academy of Engineering.  
1996–99 Editor in Chief, National High Performance Software Exchange (NHSE).  
1997–99 Co-Chair, President's Information Technology Advisory Committee (Member 1997–2001).

- 1998–2000 Member, Advisory Committee for the Hybrid Technology Multithreaded (HTMT) Computer Architecture for Petaflops Computing.
- 1998–98 Member, Program Committee, PPOPP '98: The Sixth ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming.
- 1999 Member, ACM Blue Ribbon Panel on Licensing Software Engineers.
- 1999– Member, Advisory Committee, Deep Computing Institute, IBM Thomas J. Watson Research Center.
- 1999 Member, Program Committee, HUG '99: The 3rd Annual HPF User Group Meeting.
- 1999–99 Chair, Awards Committee, Supercomputing '99.
- 2000–01 Member, Program Committee, International Conference on Supercomputing 2002.
- 2001–03 Member, Advisory Board, Advanced Reality, Inc.
- 2001–03 Member, Advisory Board, Georgia Tech College of Computing.
- 2002– Member, Technical Advisory Board, Catalytic Compilers.
- 2002–03 Chair, Division Review Committee, Computer and Computational Sciences Division at Los Alamos National Laboratory.
- 2002– Member, Division Review Committee, Computer and Computational Sciences Division at Los Alamos National Laboratory.
- 2002– Member, Board of Directors, The Telecom Opportunity Institute.
- 2002– Member, Advisory Committee, Tapia 2003 Conference.
- 2002– Member, Advisory Team, TeraGrid project.
- 2002 Member, External Review Committee, University of Texas, Computer Science Department.

**Professional Societies:**

- Association for Computing Machinery (Fellow)
- Society for Industrial and Applied Mathematics
- Institute of Electrical and Electronic Engineers (Fellow)
- Sigma Xi
- American Association for the Advancement of Science (Fellow)
- National Academy of Engineering
- American Academy of Arts and Sciences

**Ph.D. Dissertations Directed:**

1. Scott K. Warren, “The Coroutine Model of Attribute Grammar Evaluation,” Department of Mathematical Sciences, Rice University, 1976.
2. Rodney Farrow, “Attribute Grammar Models for Data-Flow Analysis,” Department of Mathematical Sciences, Rice University, 1977.
3. Jayashree Ramanathan, “Global Data Flow Algorithms and Their Implementations,” Department of Mathematical Sciences, Rice University, 1977.
4. Linda Zucconi, “A Graph Grammatical Approach to Compiler Optimization,” Department of Electrical Engineering, Rice University, 1977.

5. Thomas E. Shields, "Syntax Directed Error Analysis in Automatically Constructed Parsers," Department of Mathematical Sciences, Rice University, 1978.
6. Scott C. Marks, "Optimization of Functional Programs" (with R. S. Cartwright and S. K. Warren), Department of Mathematical Sciences, Rice University, 1982.
7. Khalid O. Thabit, "Cache Management by the Compiler," Department of Mathematical Sciences, Rice University, 1982.
8. John Randal Allen, "Dependence Analysis for Subscripted Variables and Its Application to Program Transformations," Department of Mathematical Sciences, Rice University, 1983.
9. Keith D. Cooper, "Interprocedural Data Flow Analysis in a Programming Environment," Department of Mathematical Sciences, Rice University, 1983.
10. F. Kenneth Zadeck, "Incremental Data Flow Analysis in a Structured Program Editor," Department of Mathematical Sciences, Rice University, 1983.
11. Linda M. Torczon, "Compilation Dependences in an Ambitious Optimizing Compiler," Department of Computer Science, Rice University, 1985.
12. Hausi A. Muller, "Rigi —A Model for Software System Construction, Integration, and Evolution Based on Module Interface Specifications" (with R. T. Hood), Department of Computer Science, Rice University, 1986.
13. David Callahan, "A Global Approach to the Detection of Parallelism," Department of Computer Science, Rice University, 1987.
14. David Chase, "Garbage Collection and Other Optimizations," Department of Computer Science, Rice University, 1988.
15. Allan Porterfield, "Software Methods for Improving Cache Performance on Supercomputer Applications," Department of Computer Science, Rice University, 1989.
16. Vasanth Balasundaram, "Interactive Parallelization of Numerical Scientific Programs," Department of Computer Science, Rice University, 1989.
17. Carl Rosene, "Incremental Dependence Analysis," Department of Computer Science, Rice University, 1990.
18. Jaspal Subhlok, "Analysis of Synchronization in a Parallel Programming Environment," Department of Computer Science, Rice University, 1990.
19. Mary Wolcott Hall, "Managing Interprocedural Optimization," Department of Computer Science, Rice University, 1991.
20. Kathryn S. McKinley, "Automatic and Interactive Parallelization," Department of Computer Science, Rice University, 1992.

21. Steve Carr, "Memory-Hierarchy Management," Department of Computer Science, Rice University, 1992.
22. C. W. Tseng, "An Optimizing Fortran D Compiler for MIMD Distributed-Memory Machines," Department of Computer Science, Rice University, 1992.
23. Paul Havlak, "Interprocedural Symbolic Analysis," Department of Computer Science, Rice University, 1995.
24. Reinhard von Hanxleden, "Compiler Support for Machine Independent Parallelization of Irregular Problems," Department of Computer Science, Rice University, 1995.
25. Lorie M. Liebrock, "Using Problem Topology in Parallelization," Department of Computer Science, Rice University, 1995.
26. Douglas M. Monk, "An Empirical Evaluation of Dependence Analysis in Parallel Program Comprehension," Department of Computer Science, Rice University, 1995.
27. Ulrich Kremer, "Automatic Data Layout for Distributed Memory Machines," Department of Computer Science, Rice University, 1995.
28. Ajay Sethi, "Communication Generation for Data-Parallel Languages," Department of Computer Science, Rice University, 1997.
29. Ervan Darnell, "Cache Coherence Using Local Knowledge," Department of Computer Science, Rice University, 1997.
30. Gina Goff, "Practical Techniques to Augment Dependence Analysis in the Presence of Symbolic Terms," Department of Computer Science, Rice University, 1997.
31. Gerald H. Roth, "Optimizing Fortran 90D/HPF for Distributed-Memory Computers," Department of Computer Science, Rice University, 1997.
32. Nathaniel McIntosh, "Compiler Support for Software Prefetching," Department of Computer Science, Rice University, 1998.
33. Chen Ding, "Improving Effective Bandwidth through Compiler Enhancement of Global and Dynamic Cache Reuse," Department of Computer Science, Rice University, January 2000 (Honorable Mention Dissertation Award, Rice University-Texas Medical Center of Sigma Xi outstanding dissertation competition in the Physical Sciences/Engineering category).
34. Zoran Budimlic, "Compiling Java for High Performance and the Internet," Department of Computer Science, January 2001.
35. Qing Yi, "Transforming Complex Loop Nests for Locality," Department of Computer Science, Rice University, May 2002.
36. Arun Chauhan, "Telescoping Matlab for DSP Applications," Department of Computer Science, Rice University, July 2003.

37. Anirban Mandal, "Toward a Tool for Scheduling Application Workflows onto Distributed Grid Systems," Department of Computer Science, Rice University, May 2006.
38. Yuan Zhao, "Array Syntax Compilation and Performance Tuning," Department of Computer Science, Rice University, September 2006

**Masters Theses Directed:**

1. Ankur R. Hajare, "Implementation of Set-Theoretic Languages on Computers with Tagged Architectures," Department of Electrical Engineering, Rice University, 1975.
2. Scott K. Warren, "Efficient Evaluation of Attribute Grammars," Department of Mathematical Sciences, Rice University, 1975.
3. Robert E. Bruce, "Incremental Compilation and Code Generation," Department of Electrical Engineering, Rice University, 1980.
4. Hariklia Tsalapatas, "Interprocedural Array Side Effects Analysis," Department of Computer Science, Rice University, 1993.
5. Anirban Mandal, "Mapping HPF onto the Grid," Department of Computer Science, Rice University, 2002.
6. Cheryl McCosh, "Type-Based Specialization in a Telescoping Compiler for Matlab," Department of Computer Science, Rice University, 2002.
7. Mackale Joyner, "Improving Object Inlining for High-Performance Java Scientific Applications" (joint with Zoran Budimlic), Department of Computer Science, Rice University, 2005
8. Rui Zhang, "Performance Modeling and Prediction for Scientific Java Applications" (joint with Zoran Budimlic), Department of Computer Science, Rice University, 2006

**Book:**

*Optimizing Compilers for Modern Architectures* (with Randy Allen), Morgan-Kaufmann Publishers, San Francisco, 2002. Chinese edition: 2004, Second printing: 2005.

**Book Edited:**

*Sourcebook of Parallel Computing* (with Jack Dongarra, Ian Foster, Geoffrey Fox, William Gropp, Linda Torczon, and Andy White), Morgan Kaufmann Publishers, San Francisco, 2003.

## Patent:

Digital Computer Register Allocation and Code Spilling Using Interference Graph Coloring (with P. Briggs, K. D. Cooper, and L. Torczon), (Serial Number: 08/027,937).

## Papers and Book Chapters:

1. "A Global Flow Analysis Algorithm," *International Journal of Computer Mathematics*, Gordon and Breach, Section A, Volume 3, (1971), pages 5–15.
2. "Index Register Allocation in Straight Line Code and Simple Loops," *Design and Optimization of Compilers* (R. Rustin, editor), Prentice-Hall, Englewood Cliffs, NJ, (1972), pages 51–63.
3. "Safety of Code Motion," *International Journal of Computer Mathematics*, Gordon and Breach, Section A, Volume 3, (1972), pages 117–130.
4. "Review of *A Mathematical Theory of Global Program Optimization* by M. Schaefer," *SIAM Review*, Volume 16, Number 4, (October 1974), pages 565–566.
5. "An Introduction to the Set-Theoretic Language SETL" (with J. Schwartz), *Computers and Mathematics with Applications*, Pergamon Press, Volume 1, (1975), pages 97–119.
6. "Node Listings Applied to Data Flow Analysis," *Conference Record of the Second ACM Symposium on Principles of Programming Languages*, Palo Alto, CA, (January 1975), pages 10–21.
7. "Profitability Computations on Program Flow Graphs" (with J. Cocke), *Computers and Mathematics with Applications*, Pergamon Press, Volume 2, (1976), pages 145–159.
8. "PLANET: A Simulation Approach to PERT" (with R. Thrall), *Computers and Operations Research*, Pergamon Press, Volume 3, Number 4, (1976), pages 313–325.
9. "Automatic Generation of Efficient Evaluators for Attribute Grammars" (with S. K. Warren), *Conference Record of the Third ACM Symposium on Principles of Programming Languages*, Atlanta, GA, (January 1976), pages 32–49.
10. "A Comparison of Two Algorithms for Global Data Flow Analysis," *SIAM Journal on Computing*, Volume 5, Number 1, (March 1976), pages 158–180.
11. "Graph Grammars and Global Program Data Flow Analysis" (with R. Farrow and L. Zucconi), *Seventeenth Annual Symposium on Foundations of Computer Science*, Houston, TX, (October 1976), pages 42–56.
12. "Applications of a Graph Grammar for Program Control Flow Analysis" (with L. Zucconi), *Conference Record of the Fourth ACM Symposium on Principles of Programming Languages*, Los Angeles, CA, (January 1977), pages 72–85.



13. “An Algorithm for Reduction of Operator Strength” (with J. Cocke), *Communications of the ACM*, Volume 20, Number 11, (November 1977), pages 850–856.
14. “Use-Definition Chains with Applications,” *Journal of Computer Languages*, Volume 3, Number 3, (1978), pages 163–179.
15. “A Survey of Compiler Optimization Techniques,” *Le Point sur la Compilation* (M. Amirchahy and N. Ne’l, editors), INRIA, Le Chesnay, France, (1978), pages 115–161.
16. “Optimization of Vector Operations in an Extended Fortran Compiler,” *Proceedings of the 1978 LASL Workshop on Vector and Parallel Processors*, Los Alamos, NM, (September 1978), pages 238–251.
17. “A Deterministic Attribute Grammar Evaluator Based on Dynamic Sequencing” (with J. Ramanathan), *ACM Transactions on Programming Languages and Systems*, Volume 1, Number 1, (July 1979), pages 142–160.
18. “The Early Development of Programming in the USSR” (English version with A. Ershov and M. Shura-Bura), *A History of Computing in the Twentieth Century* (N. Metropolis, J. Howlett, and G. C. Rota, editors), Academic Press, New York, (1980), pages 137–196.
19. “Vector Mode Computation” (with J. Huang and A. Liles, Jr.), *IBM Technical Disclosure Bulletin*, Volume 23, Number 5, (October 1980), pages 2171–2172.
20. “A Survey of Data Flow Analysis Techniques,” *Program Flow Analysis: Theory and Applications* (N. D. Jones and S. S. Muchnick, editors), Prentice-Hall, Englewood Cliffs, NJ, (1981), pages 5–54.
21. “Reduction of Operator Strength” (with F. Allen and J. Cocke), *Program Flow Analysis: Theory and Applications* (N. D. Jones and S. S. Muchnick, editors), Prentice-Hall, Englewood Cliffs, NJ, (1981), pages 79–101.
22. “Pathlistings Applied to Data Flow Analysis” (with J. Ramanathan), *Acta Informatica*, Volume 16, Facsimile 3, (1981), pages 253–273.
23. “Conversion of Control Dependence to Data Dependence” (with J. R. Allen, C. Porterfield, and J. Warren), *Conference Record of the Tenth Annual ACM Symposium on Principles of Programming Languages*, Austin, TX, (January 1983), pages 177–189.
24. “Automatic Loop Interchange” (with J. R. Allen), *Proceedings of the SIGPLAN ‘84 Symposium on Compiler Construction*, *SIGPLAN Notices*, Volume 19, Number 6, (June 1984), pages 233–246.
25. “Efficient Computation of Flow-Insensitive Interprocedural Summary Information” (with K. D. Cooper), *Proceedings of the SIGPLAN ‘84 Symposium on Compiler Construction*, *SIGPLAN Notices*, Volume 19, Number 6, (June 1984), pages 247–258.

26. “Efficient Computation of Flow-Insensitive Interprocedural Summary Information—A Correction” (with K. D. Cooper), *SIGPLAN Notices*, Volume 23, Number 4, (April 1988), pages 35–42.
27. “PFC: A Program to Convert Fortran to Parallel Form” (with J. R. Allen), *Supercomputers: Design and Applications* (K. Hwang, editor), IEEE Computer Society Press, (August 1984), pages 186–203.
28. “A Programming Environment for Fortran” (with R. T. Hood), *Proceedings of the Eighteenth Hawaii International Conference on System Sciences*, Western Periodicals, North Hollywood, CA, Volume II (Software), (January, 1985), pages 625–637.
29. “A Parallel Programming Environment” (with J. R. Allen), *IEEE Software*, Volume 2, Number 4, (July 1985), pages 21–29.
30. “The Impact of Interprocedural Analysis and Optimization on the Design of a Software Development Environment” (with K. D. Cooper and L. Torczon), *Proceedings of the SIGPLAN ’85 Symposium on Language Issues in Programming Environments*, *SIGPLAN Notices*, Volume 20, Number 7, (July 1985), pages 107–116.
31. “Programming Language Support for Supercomputers” (with R. T. Hood), *Frontiers of Supercomputing* (N. Metropolis, D. Sharp, W. Worlton, and K. Ames, editors), University of California Press, Berkeley, CA, (1986), pages 282–311.
32. “Programming Environments for Supercomputers” (with J. R. Allen), *Supercomputers: Algorithms, Architectures, and Scientific Computation* (F. Matsen and T. Tajima, editors), University of Texas Press, Austin, TX, (1986), pages 19–38.
33. “PTOOL: A Semi-Automatic Parallel Programming Assistant” (with J. R. Allen, D. Baumgartner, and A. Porterfield), *Proceedings of the 1986 International Conference on Parallel Processing*, IEEE Computer Society Press, Washington, D.C., (1986), pages 164–170.
34. “Optimization of Compiled Code in the Programming Environment” (with K. D. Cooper and L. Torczon), *Proceedings of the Nineteenth Hawaii International Conference on System Sciences*, Western Periodicals, North Hollywood, CA, Volume II (Software), (January 1986), pages 492–502.
35. “Interprocedural Optimization: Eliminating Unnecessary Recompile” (with K. D. Cooper and L. Torczon), *Proceedings of the SIGPLAN ’86 Symposium on Compiler Construction*, *SIGPLAN Notices*, Volume 21, Number 7, (July 1986), pages 58–67.
36. “Interprocedural Constant Propagation” (with D. Callahan, K. D. Cooper, and L. Torczon), *Proceedings of the SIGPLAN ’86 Symposium on Compiler Construction*, *SIGPLAN Notices*, Volume 21, Number 7, (July 1986), pages 152–161.
37. “The Impact of Interprocedural Analysis and Optimization in the Programming Environment” (with K. D. Cooper and L. Torczon), *ACM Transactions on Pro-*

- gramming Languages and Systems*, Volume 8, Number 4, (October 1986), pages 491–523.
38. “Editing and Compiling Whole Programs” (with K. D. Cooper, L. Torczon, A. Weingarten, and M. Wolcott), *Proceedings of the ACM SIGSOFT/SIGPLAN Symposium on Practical Software Development Environments*, *SIGPLAN Notices*, Volume 22, Number 1, (January 1987), pages 92–101.
  39. “Efficient Recompilation of Module Interfaces in a Software Development Environment” (with R. T. Hood and H. Muller), *Proceedings of the ACM SIGSOFT/SIGPLAN Symposium on Practical Software Development Environments*, *SIGPLAN Notices*, Volume 22, Number 1, (January 1987), pages 180–189.
  40. “Automatic Decomposition of Scientific Programs for Parallel Execution” (with J. R. Allen and D. Callahan), *Conference Record of the Fourteenth Annual Symposium on Principles of Programming Languages*, Munich, Germany, (January 1987), pages 63–76.
  41. “Parallel Programming Support in ParaScope” (with D. Callahan, K. D. Cooper, R. T. Hood, L. Torczon, and S. K. Warren), *Parallel Computing in Science and Engineering* (R. Dierstein, D. Muller-Wichards, and H. Wacker, editors), *Lecture Notes in Computer Science* 295, Springer-Verlag, Berlin, (June 1987), pages 91–106.
  42. “Automatic Translation of Fortran Programs to Vector Form” (with J. R. Allen), *ACM Transactions on Programming Languages and Systems*, Volume 9, Number 4, (October 1987), pages 491–542.
  43. “A Practical Environment for Scientific Programming” (with A. Carle, K. D. Cooper, R. T. Hood, L. Torczon, and S. K. Warren), *IEEE Computer*, Volume 20, Number 11, (November 1987), pages 75–89.
  44. “Analysis of Interprocedural Side Effects in a Parallel Programming Environment” (with D. Callahan), *Journal of Parallel and Distributed Computing*, Volume 5, (1988), pages 517–550.
  45. “Interprocedural Side-Effect Analysis in Linear Time” (with K. D. Cooper), *Proceedings of the SIGPLAN ’88 Conference on Programming Language Design and Implementation*, *SIGPLAN Notices*, Volume 23, Number 7, (July 1988), pages 57–66.
  46. “Estimating Interlock and Improving Balance for Pipelined Machines” (with D. Callahan and J. Cocke), *Journal of Parallel and Distributed Computing*, Volume 5, Number 4, (August 1988), pages 334–358.
  47. “Compiling Programs for Distributed-Memory Multiprocessors” (with D. Callahan), *Journal of Supercomputing*, Volume 2, Number 2, (October 1988), pages 151–169.
  48. “ParaScope: A Parallel Programming Environment” (with D. Callahan, K. D. Cooper, R. T. Hood, and L. Torczon), *The International Journal of Supercomputer Applications*, Volume 2, Number 4, (December 1988), pages 84–99.

49. "Performance of Parallel Processors" (with H. Flatt), *Parallel Computing*, Volume 12, Number 1, (October 1989), pages 1–20.
50. "The ParaScope Editor: An Interactive Parallel Programming Tool" (with V. Balasundaram, U. Kremer, K. McKinley, and J. Subhlok), *Proceedings: Supercomputing '89*, Reno, NV, (November 1989), pages 540–550.
51. "Fast Interprocedural Alias Analysis" (with K. D. Cooper), *Conference Record of the Sixteenth Annual ACM SIGACT/SIGPLAN Symposium on Principles of Programming Languages*, Austin, TX, (January 1989), pages 49–59.
52. "Virtual Shared Memory for Distributed-Memory Machines" (with H. Zima), *Proceedings of the Fourth Conference on Hypercubes, Concurrent Computers, and Applications*, Monterey, CA, (March 1989), pages 361–366.
53. "Compile-Time Detection of Race Conditions in a Parallel Program" (with V. Balasundaram), *Proceedings of the 1989 ACM International Conference on Supercomputing*, Crete, Greece, (June 1989), pages 175–185.
54. "A Technique for Summarizing Data Access and Its Use in Parallelism-Enhancing Transformations" (with V. Balasundaram), *Proceedings of the SIGPLAN '89 Conference on Programming Language Design and Implementation, SIGPLAN Notices*, Volume 24, Number 7, (July 1989), pages 41–53.
55. "Coloring Heuristics for Register Allocation" (with P. Briggs, K. D. Cooper, and L. Torczon), *Proceedings of the SIGPLAN '89 Conference on Programming Language Design and Implementation, SIGPLAN Notices*, Volume 24, Number 7, (July 1989), pages 275–284.
56. "Blocking Linear Algebra Codes for Memory Hierarchies" (with S. Carr), *Proceedings of the Fourth SIAM Conference on Parallel Processing for Scientific Computing*, Chicago, IL, (December 1989), pages 400–405.
57. "Experience with Interprocedural Analysis of Array Side Effects" (with P. Havlak), *IEEE Transactions on Parallel and Distributed Systems*, Volume 2, Number 3, (1990).
58. "Analyzing and Visualizing Performance of Memory Hierarchies" (with D. Callahan and A. Porterfield), *Performance Instrumentation and Visualization* (M. Simmons and R. Koskela, editors), ACM Press, Frontier Series, New York, (1990), pages 1–26.
59. "Analysis of Event Synchronization in a Parallel Programming Tool," (with D. Callahan and J. Subhlok), *Proceedings of the Second ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming, SIGPLAN Notices*, Volume 25, Number 3, (March 1990), pages 21–30.
60. "An Interactive Environment for Data Partitioning and Distribution" (with V. Balasundaram, G. Fox, and U. Kremer), *Proceedings of the Fifth Distributed-Memory Computing Conference*, Volume II (Architecture, Software Tools, and Other General Issues), Charleston, SC, (April 1990), pages 1160–1170.

61. “Constructing the Procedure Call Multigraph” (with D. Callahan, A. Carle, and M. W. Hall), *IEEE Transactions on Software Engineering*, Volume 16, Number 4, (April 1990), pages 483–487.
62. “Improving Register Allocation for Subscripted Variables” (with D. Callahan and S. Carr), *Proceedings of the ACM SIGPLAN '90 Conference on Programming Language Design and Implementation*, *SIGPLAN Notices*, Volume 25, Number 6, (June 1990), pages 53–65.
63. “Parallel Program Debugging with On-the-Fly Anomaly Detection” (with R. T. Hood and J. Mellor-Crummey), *Proceedings: Supercomputing '90*, New York, NY, (November 1990), pages 74–81.
64. “Loop Distribution with Arbitrary Control Flow” (with K. McKinley), *Proceedings: Supercomputing '90*, New York, NY, (November 1990), pages 407–416.
65. “Compiling Scientific Code for Complex Memory Hierarchies” (with S. Carr), *Proceedings of the Twenty-Fourth Annual Hawaii International Conference on System Sciences*, Volume I (Architectures and Engineering Technologies), IEEE Computer Society Press, Los Alamitos, CA, (January 1991), pages 536–544.
66. “Software Prefetching” (with D. Callahan and A. Porterfield), *Proceedings of the Fourth International Conference on Architectural Support for Programming Languages and Operating Systems*, *SIGPLAN Notices*, Volume 26, Number 4, (April 1991), pages 40–52.
67. “Analysis and Transformation in the ParaScope Editor” (with K. McKinley and C. W. Tseng), *Proceedings of the 1991 ACM International Conference on Supercomputing*, Cologne, Germany, (June 1991), pages 433–447.
68. “Practical Dependence Testing” (with G. Goff and C. W. Tseng), *Proceedings of the SIGPLAN '91 Conference on Programming Language Design and Implementation*, *SIGPLAN Notices*, Volume 26, Number 6, (June 1991), pages 15–29.
69. “A Static Performance Estimator to Guide Data Partitioning Decisions” (with V. Balasundaram, G. Fox, and U. Kremer), *Proceedings of the Third ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming*, *SIGPLAN Notices*, Volume 26, Number 7, (July 1991), pages 213–223.
70. “An Implementation of Interprocedural Bounded Regular Section Analysis” (with P. Havlak), *IEEE Transactions on Parallel and Distributed Systems*, Volume 2, Number 3, (July 1991), pages 350–360.
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198. “Automatic Blocking of QR and LU Factorizations for Locality” (with Q. Yi, H. You, K. Seymour, and J. Dongarra), in *Proceedings of the ACM SIGPLAN Workshop on Memory Systems Performance (MSP 2004)*, June 2004.
199. “An Automatic Source-level Transformer for Improving the Performance of DSP Applications in Matlab” (with Arun Chauhan), in *Proceedings of the IASTED International Conference on Signal and Image Processing (SIP 2004)*, August 2004.
200. “Defining and Measuring the Productivity of Programming Languages” (with C. Koelbel and R. Schreiber), in the *International Journal of High Performance Computing Applications Special Issue*, Vol. 18, No. 3, Fall 2004.
201. “Automatic Tuning of Whole Applications Using Direct Search and a Performance-based Transformation System” (with Apan Qasem and John Mellor-Crummey), *Proceedings of the LACSI Symposium*, Los Alamos Computer Science Institute, Los Alamos, NM, October 2004.
202. “Scalarization using Loop Alignment and Loop Skewing” (with Y. Zhao), *The Journal of Supercomputing* 31(1), pp. 5-46, January 2005.
203. “Telescoping Languages: A System for Automatic Generation of Domain Languages” (with Bradley Broom, Arun Chauhan, Rob Fowler, John Garvin, Charles Koelbel, Cheryl McCosh, and John Mellor-Crummey), *Proceedings of the IEEE* 93 (2), pp. 387–408, February 2005.
204. “Scalarization on Short Vector Machines” (with Yuan Zhao), in *Proceedings of the 2005 IEEE International Symposium on Performance Analysis of Systems and Software (ISPASS)*, Austin, TX, March 2005.
205. “Compiling Almost-Whole Java Programs” (with Z. Budimlic), *Concurrency and Computation: Practice and Experience* 17(5-6), pp. 573-587. April-May 2005.



206. "Task Scheduling Strategies for Workflow-based Applications in Grids" (with Jim Blythe, Sonal Jain, Ewa Deelman, Yolanda Gil, Karan Vahi, and Anirban Mandal), in *Proceedings of the International Symposium on Cluster Computing and the Grid 2005 (CCGrid05)*, May 2005.
207. "New Grid Scheduling and Rescheduling Methods in the GrADS Project" (with Fran Berman, Henri Casanova, Andrew Chien, Keith Cooper, Holly Dail, Anshuman Dasgupta, Wei Deng, Jack Dongarra, Lennart Johnsson, Ken Kennedy, Charles Koelbel, Bo Liu, Xin Liu, Anirban Mandal, Gabriel Marin, Mark Mazina, John Mellor-Crummey, Celso Mendes, Alex Olugbile, Mitul Patel, Dan Reed, Zhiao Shi, Otto Sievert, Huaxia Xia, and Asim YarKhan), in *International Journal of Parallel Programming* 33 (2-3), pp. 209-229, June 2005.
208. "Scheduling Strategies for Mapping Application Workflows onto the Grid" (with A. Mandal, Charles Koelbel, Gabriel Marin, John Mellor-Crummey, Bo Liu, and Lennart Johnsson, in *Proceedings of the 14<sup>th</sup> IEEE International Symposium on High Performance Distributed Computing (HPDC 2005)*, Research Triangle Park, NC, July 24-27, 2005.
209. "A Cache-conscious Profitability Model for Empirical Tuning of Loop Fusion" (with Apan Qasem), in *Proceedings of the 2005 International Workshop on Languages and Compilers for Parallel Computing*, Hawthorne, NY, October 20-22, 2005.
210. "Performance Modeling and Prediction for Scientific Java Applications" (with R. Zhang and Zoran Budimlic), to appear in *Proceedings of the International Symposium on Performance Analysis of Systems and Software (ISPASS-2006)*, Austin, TX, March 2006.
211. "Automatic Tuning of Whole Applications Using Direct Search and a Performance-based Transformation System" (with Apan Qasem and John Mellor-Crummey), in *Journal of Supercomputing* 36 (2): "Special Issue on Computer Science in Support of High-Performance Applications" (Rod Oldehoeft, editor), May 2006, pp. 183-196.
212. "Scalable Grid Application Scheduling via Decoupled Resource Selection and Scheduling" (with Yang Zhang, Anirban Mandal, Henri Casanova, Andrew Chien, Yang-Suk Kee, and Charles Koelbel), in *Proceedings of the 6<sup>th</sup> International Symposium on Cluster Computing and the Grid (CCGrid06)*, Singapore, May 16-19, 2006.
213. "Profitable Loop Fusion and Tiling Using Model-driven Empirical Search" (with Apan Qasem), in *Proceedings of the 20<sup>th</sup> ACM International Conference on Supercomputing (ICS06)*, Queensland, Australia, June 28-July 1, 2006.
214. "Evaluation of a Workflow Scheduler Using Integrated Performance Modelling and Batch Queue Wait Time Prediction" (with Daniel Nurmi, Anirban Mandal, John Brevik, Rich Wolski, and Chuck Koelbel), to appear in *Proc. SC'06*, Tampa, FL, November 2006.

### Accepted for Publication:

1. “The Rise and Fall of High Performance Fortran: An Historical Object Lesson” (with Charles Koelbel and Hans Zima), to appear in *Proceedings of the Third ACM SIGPLAN History of Programming Languages Conference (HOPL III)*, San Diego, CA, June 2007.
2. “Improving Compilation of Java Scientific Applications” (with Zoran Budimlic and Mackale Joyner), to appear in *International Journal of High Performance Computing Applications (IJHPCA)*.
3. “Dependence-based Code Generation for a CELL Processor” (with Yuan Zhao), to appear in *Proc. 19th Workshop on Languages and Compilers for Parallel Computing (LCPC06)*.
4. “An Empirical Study of Iterative Data-flow Analysis” (with Keith D. Cooper and Timothy J. Harvey), to appear in the *Proceedings of 15th IEEE International Conference on Computing (CIC)*, Mexico City, Mexico, November 2006.
5. “Compiling Parallel Matlab for General Distributions Using Telescoping Languages” (with Mary Fletcher, Cheryl McCosh, and Guohua Jin), to appear in *Proceedings of the 2007 International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Honolulu, Hawaii, April 2007.
6. “Why Performance Models Matter for Grid Computing,” to appear in *WoCo9: Grid-based Problem Solving Environments: Implications for Development and Deployment of Numerical Software*, IFIP Working Conference Proceedings, 2006.

### Significant Other Contributions:

1. “Typed Fusion with Applications to Parallel and Sequential Code Generation” (with K. McKinley), Technical Report TR93-208, Computer Science Department, Rice University, Houston, TX, August 1993.
2. “High Performance Fortran Language Specification, version 1.0”, High Performance Fortran Forum (Ken Kennedy, chair), Technical Report CRPC-TR92225, Center for Research on Parallel Computation, Rice University, Houston, TX, January 1993; also published in *Scientific Programming 2* (1–2), pages 1–170, 1993.
3. “High Performance Fortran Language Specification, version 1.1”, High Performance Fortran Forum (Ken Kennedy, chair), Technical Report CRPC-TR92225-1.1, Center for Research on Parallel Computation, Rice University, Houston, TX, November 1994.
4. “High Performance Fortran Language Specification, version 2.0”, High Performance Fortran Forum (Ken Kennedy, chair), Technical Report CRPC-TR92225-2.0, Center for Research on Parallel Computation, Rice University, Houston, TX, January 1997.

5. "Information Technology Research: Investing in Our Future", Report to the President, Presidents Information Technology Advisory Committee (William Joy and Ken Kennedy, co-chairs), February 1999.
6. "Resource-constrained Loop Fusion" (with Chen Ding), Technical Report TR03-424, Computer Science Department, Rice University, Houston, TX, September 2003.
7. "Static Type Inference for Specialization in a Telescoping Compiler" (with Cheryl McCosh, Eric Allen, and Walid Taha), Technical Report TR04-439, Computer Science Department, Rice University, September 2004.

#### **Keynote and Plenary Conference Addresses:**

1. "The Future of Information Management Technology," Keynote Address, American Association of Medical Colleges Course on Information Management, Duck Key, FL, January 27, 1985.
2. "Compilation for Multiprocessor Architectures," Plenary Lecture, International Conference on Computer Design, Rye Brook, NY, October 7, 1985.
3. "Programming Support Environments for Parallel Computer Systems," Keynote Address, Convex Users' Group Meeting, Richardson, TX, October 7, 1988.
4. "Programming Support Environments for Parallel Computer Systems," Plenary Address, Fifth SIAM Conference on Parallel Processing, Houston, TX, March 24, 1991.
5. "The Coming Generation of Massively Parallel Supercomputers," Invited Plenary Address, 14<sup>th</sup> International Symposium on Mathematical Programming, Amsterdam, The Netherlands, August 6, 1991.
6. "Compiler Support for Machine-Independent Parallel Programming," Keynote Address, First International Conference of the Austrian Center for Parallel Computation, Salzburg, Austria, September 30, 1991.
7. "Architecture-Independent Parallel Programming," Keynote Address," Science Applications International Corporation, McLean, VA, October 8, 1992.
8. "Architecture and Software of Parallel Computers," Keynote Address," DIMACS Workshop, Rutgers University, Piscataway, NJ, April 30, 1993.
9. "Machine Independent Parallel Programming: Prospects and Problems," Keynote Address, 22<sup>nd</sup> International Conference on Parallel Processing, St. Charles, IL, August 16, 1993.
10. "The Prospects for Architecture-Independent Parallel Programming," Keynote Address, International Conference on Parallel and Distributed Systems, Hsinchu, Taiwan, Republic of China, December 19, 1994.

11. "High Performance Fortran and Its Role in Architecture Independent Parallel Programming," Keynote Address, Convex Computer Corporation, Dallas, TX, March 8, 1995.
12. "Computational Science: An Overview-Current and Future," Opening Address, 1995 Association of Computer Science and Engineering Departments at Minority Institutions (ADMI) Annual Workshop, New Orleans, LA, August 10, 1995.
13. "The Prospects for Architecture-Independent Parallel Programming," Keynote Address, Conference on High Performance Computing and Networking (HPCN Europe), Brussels, Belgium, April 18, 1996.
14. "Overview of HPCC in USA," Keynote Address, International Workshop for High Performance Multimedia Computing and Communication (HPMCC), Tokyo, Japan, June 21, 1996.
15. "Keynote Speech: Technology Transfer Paths for HPCC Software Tools," Keynote Address, Software Tools for High Performance Computing Systems, LANL Workshop '96, Chatham, MA, October 16, 1996.
16. "The Prospects for Architecture-Independent Parallel Programming," Keynote Address, IEEE Symposium on Parallel and Distributed Processing (SPDP '96), New Orleans, LA, October 23, 1996.
17. "Machine-Independent Parallel Programming," Keynote Address, DoD HPCMP Users Meeting, Urbana, IL, November 8, 1996.
18. "Implementing HPF on Cluster Architectures," Keynote Address, Cluster Computing Conference, Emory University, Atlanta, GA, March 10, 1997.
19. "Compiling a Software Bridge to the Parallel Architectures of the 21<sup>st</sup> Century," Invited Plenary Address, Seventh ACM/SIGPLAN Symposium on Principles and Practice of Parallel Programming, Las Vegas, NV, June 19-20, 1997.
20. "High Performance Fortran: A Ten Year View," Keynote Address, High Performance Distributed Computing Communications-6, Portland, OR, August 7, 1997.
21. "High Performance Fortran: A Ten Year View," Keynote Address, The Tenth International Workshop on Languages and Compilers for Parallel Computing, Minneapolis, MN, August 8, 1997.
22. "The Challenge of Supporting Architecture-Independent Programming on Parallel and Distributed Computer Systems," Keynote Address, Parallel Architectures and Compiler Techniques (PACT '97), San Francisco, CA, November 14, 1997.
23. "Programming Support Software for High Performance Computers," Invited State of the Field Address, Supercomputing '97, San Jose, CA, November 19, 1997.
24. "HPF: Achievements, Problems, and Prospects," Keynote Address, HUG '98: The 2nd Annual HPF User Group Meeting, Porto, Portugal, June 25, 1998.

25. "The Investment in Information Technology Research: Interim Report of the President's Information Technology Advisory Committee," Challenges-of-the-Field Talk, Supercomputing '98, Orlando, FL, November 11, 1998.
26. "Memory Hierarchy Management on Modern Parallel Computer Systems," Keynote Address, The 5th International Symposium on High Performance Computer Architecture, Orlando, FL, January 12, 1999.
27. "Long-Term Research in High End Computing: The PITAC Report and Its Implications for the Petaflops Initiative," Keynote Address, The 2nd Conference on Enabling Technologies for Petaflops Computing (Petaflops II), Santa Barbara, CA, February 16, 1999.
28. "Future Investment in Information Technology Research: Report of the President's Information Technology Advisory Committee," Keynote Address, The 7th Symposium on the Frontiers of Massively Parallel Computation (Frontiers '99), Annapolis, MD, February 23, 1999.
29. "Compiler Technology in the Near and Distant Future," ACM SIGPLAN Programming Languages Achievement Award Talk, SIGPLAN Symposium on Programming Languages Design and Implementation, Atlanta, GA, May 3, 1999.
30. "Future Investment in Information Technology Research: Report of the President's Information Technology Advisory Committee," Plenary Address, The 1999 Federated Computing Research Conference (FCRC '99), Atlanta, GA, May 5, 1999.
31. "Federal Perspectives on Information Technology," Invited Address, The Fourth Annual Statewide Information Technology Conference, Indiana University, Indianapolis, IN, June 4, 1999.
32. "Interaction Between Run-Time Systems and Compilers," Keynote Address, 4th Workshop on Runtime Systems for Parallel Programming (RTSPP), Cancun, Mexico, May 1, 2000.
33. "Compiler Architecture for High Performance Problem-Solving," Keynote Address, 14<sup>th</sup> International Parallel and Distributed Processing Symposium (IPDPS '00), Cancun, Mexico, May 3, 2000.
34. "Long-Term Information Technology Research: Meeting the PITAC Challenge," Plenary Address, 2000 SIAM Annual Meeting, Rio Grande, PR, July 11, 2000.
35. "Software Support for High Performance Problem-Solving," Plenary Address, 2001 International Conference on Computational Science, San Francisco, CA, May 28, 2001.
36. "Software Support for High Performance Problem-Solving on the Grid," Richard Tapia Celebration of Diversity in Computing Symposium 2001: Expanding Horizons, Sponsored by the Association for Computing Machinery (ACM) Houston, TX, October 19, 2001.

37. “Telescoping Languages: A Framework for Generating High Performance Problem-Solving Systems,” Invited Lecture, Advanced Research Workshop on High Performance Computing Technology and Applications (HPC2002), Cetraro, Italy, June 24, 2002.
38. “Automatic Generation of High Performance Problem-Solving Systems from Component Libraries,” Invited Address, Workshop on Challenges for Compiler Research (in honor of Fran Allen), Yorktown Heights, NY, July 18, 2002.
39. “Software Support for High Performance Problem-Solving on the Grid,” Invited Address, Workshop on Clusters and Computational Grids for Scientific Computing (CCGSC), Lyon, France, September 11, 2002.
40. “Software Challenges in Achieving “Productive” PetaOps,” Invited Address, US/UK Meeting on High-Performance Computing, London, England, September 30–October 2, 2002.
41. “Software Support for High Performance Problem-Solving on the Grid,” Invited Address, Performance and the Grid Workshop, Edinburgh, Scotland, December 9–10, 2002.
42. “High Performance (and Grid) Computing without a Degree in Computer Science,” Keynote Address, International Parallel and Distributed Processing Symposium (IPDPS) 2004, Santa Fe, NM, April 27, 2004.
43. “Generation of High-Performance Domain-Specific Languages from Component Libraries,” Keynote Address, Workshop on High Productivity Programming Languages and Models, Santa Monica, CA, May 18, 2004.
44. “Long-Term Information Technology Research: Challenges and Opportunities,” Keynote Address, Schlumberger Information Technology Workshop, Houston, TX, September 30, 2004.
45. “Why Performance Models Matter for Grid Computing”, Invited Plenary Address, IFIP Working Conference on Grid-Based Problem Solving Environments: Implications for Development and Deployment of Numerical Software, Prescott, AZ, July 17, 2006.
46. “Why Performance Models Matter for Grid Computing”, Invited Plenary Address, Workshop on Clusters and Computational Grids for Scientific Computing 2006, Flat Rock, NC, September 12, 2006.

#### **Distinguished and Named Lectures:**

1. “Interactive Transformation of Programs for Execution on Parallel Machines” and “Interprocedural Analysis in a Programming Environment for Fortran,” Computer Science Distinguished Lecture Series, University of Wisconsin, Madison, WI, November 12, 1986.

2. "Automatic Decomposition of Fortran Programs for Parallel Execution," Distinguished Lecture Series, Purdue University, West Lafayette, IN, December 9, 1987.
3. "Interprocedural Analysis in a Parallel Programming Environment," Distinguished Lecture Series, University of Arizona, Tucson, AZ, January 26, 1989.
4. "ParaScope: A Parallel Programming Environment," Distinguished Lecture Series, University of California at Irvine, Irvine, CA, April 17, 1989.
5. "Programming Environments for Parallel Scientific Computers," Distinguished Lecture Series, Center for the Analysis and Prediction of Storms, University of Oklahoma, Norman, OK, June 14, 1990.
6. "Compiling Fortran for the Intel Touchstone," Distinguished Lecture Series, Center for Supercomputing Research and Development, University of Illinois at Urbana-Champaign, Urbana, IL, March 20, 1991.
7. "Architecture-Independent Parallel Programming Support in Fortran D," Distinguished Lecture Series, University of Minnesota, Minneapolis, MN, December 3, 1991.
8. "Architecture-Independent Parallel Programming Support in Fortran D," Distinguished Lecture Series, Johns Hopkins University, Baltimore, MD, February 6, 1992.
9. "Architecture-Independent Parallel Programming Support in Fortran D," Distinguished Lecture Series, Carnegie Mellon University, Pittsburgh, PA, March 6, 1992.
10. "Architecture-Independent Parallel Programming Support in Fortran D," Distinguished Speaker Series, Carnegie Mellon University, Pittsburgh, PA, April 9, 1992.
11. "Architecture-Independent Parallel Programming Support in Fortran D," Distinguished Speaker Series, University of Kentucky, Lexington, KY, April 20, 1992.
12. "A Machine-Independent Programming System for Massively Parallel Computers," Distinguished Lecture Series, The University of Texas, Austin, TX, March 4, 1993.
13. "Optimization in the Fortran 77D Compiler," Distinguished Lecture Series, The University of Texas, Austin, TX, March 5, 1993.
14. "Architecture-Independent Parallel Programming Support in Fortran D," Distinguished Lecture Series, Massachusetts Institute of Technology, Cambridge, MA, April 29, 1993.
15. "Architecture-Independent Parallel Programming Support in Fortran D," IBM Distinguished Lecture Series, Duke University, Durham, NC, December 6, 1993.

16. "Architecture-Independent Parallel Programming Support in Fortran D," Distinguished Lecture Series, Georgia Tech, Atlanta, GA, February 10, 1994.
17. "Architecture-Independent Parallel Programming Support in Fortran D," Distinguished Lecture Series, Colorado State University, Ft. Collins, CO, April 11, 1994.
18. "Architecture-Independent Parallel Programming Support for Fortran D and High Performance Fortran," UCLA Distinguished Lecture Series, Los Angeles, CA, April 19, 1994.
19. "Architecture-Independent Parallel Programming Support for Fortran D and High Performance Fortran," Distinguished Lecture Series, University of California at Santa Barbara, Santa Barbara, CA, March 6, 1995.
20. "Beyond High Performance Fortran," Distinguished Lecture Series, California Institute of Technology, Pasadena, CA, March 29, 1995.
21. "Architecture-Independent Parallel Programming Support for Fortran D and High Performance Fortran," Distinguished Lecture Series, University of Utah, Salt Lake City, UT, April 6, 1995.
22. "Architecture-Independent Parallel Programming Support for Fortran D and High Performance Fortran," Distinguished Lecture Series, University of California at San Diego, San Diego, CA, May 8, 1995.
23. "Beyond High Performance Fortran," Distinguished Lecture Series, University of Illinois at Urbana-Champaign, Urbana, IL, September 15, 1995.
24. "Beyond High Performance Fortran," Distinguished Lecture Series, University of Houston, Houston, TX, October 19, 1995.
25. "Beyond High Performance Fortran," Distinguished Lecture Series, University of Tennessee, Knoxville, TN, January 26, 1996.
26. "Optimization of High Performance Fortran," Invited Address, The 1996 J. Barkley Rosser Memorial Lecture, University of Wisconsin-Madison, Madison, WI, April 25, 1996.
27. "The Search for Architecture-Independent Parallel Programming Support," Samuel D. Conte Distinguished Lecture Series, Purdue University, Indianapolis, IN, October 27, 1997.
28. "Interprocedural Compilation: Algorithm and Applications," Distinguished Lecture Series, University of North Carolina, Chapel Hill, NC, March 30, 1998.
29. "Federal Investment in Information Technology: A Strategy for the Future," Distinguished Lecture Series, University of Texas, Austin, TX, April 17, 1998.
30. "The State of Programming Support Software for High Performance Computers," Distinguished Lecture Series, University of Delaware, Newark, DE, April 24, 1998.



31. "Software and High Performance Computing: The PITAC Challenge to the Community" and "Compiler Architecture for High Performance Problem-Solving on Computational Grids," UW-L Distinguished Lecture Series in Computer Science, University of Wisconsin, LaCross, April 17, 2000.
32. "The Future of the Internet Economy: The Role of Universities and the Federal Government," Inaugural "Business Thought Leader" invited presentation, The Rice Alliance, Rice University, March 23, 2000.
33. "Software and High Performance Computing: Challenges for Research," IBM Austin Lecture Series, Austin, TX, August 23, 2000.
34. "Compiler Architecture for High Performance Problem Solving," Distinguished Lecture, Computer Science Department, Iowa State University, Ames, Iowa, February 12, 2001.
35. "Compiler Architecture for High Performance Problem Solving," Lecture Series in Computational Science, Computer Science Department, Johns Hopkins, Baltimore MD, March 26, 2001.
36. "Telescoping Languages: A Framework for Generating High Performance Problem-Solving Systems," Distinguished Lecturer, College of Computing, Georgia Tech, Atlanta, GA, April 3, 2001.
37. "Compiler Architecture for High Performance Problem Solving," Distinguished Lecture, Computer Science Department, University of Massachusetts, Amherst, MA, May 9, 2001.
38. "Telescoping Languages: A Framework for Generating High Performance Problem-Solving Systems," Motorola Distinguished Lecture, Department of Electrical and Computer Engineering, Northwestern University, Evanston, IL, May 22, 2001.
39. "Telescoping Languages: A Framework for Generating High Performance Problem-Solving Systems," Distinguished Lecture Series, Department of Computer Science, The University of Chicago, Chicago, IL, April 2, 2002.
40. "Increasing Productivity in Computational Problem Solving," University Professor Lecture Series, Dean's Office, Engineering, Rice University, Houston, TX, January 30, 2003.
41. "Generation of High Performance Problem-Solving Systems from Domain Libraries," Distinguished Lecture Series, Erik Jonsson School of Engineering and Computer Science, The University of Texas at Dallas, Dallas, TX, February 21, 2003.
42. "High Performance Computing without a Degree in Computer Science," Rice Alliance, Austin Chapter, University of Texas, Austin, TX, January 26, 2004.

43. "Generation of High-Performance Domain-Specific Languages from Component Libraries," Distinguished Lecture Series, Department of Computer Science, University of Rochester, Rochester, NY, Sept 27, 2004.
44. "Compilers for High-Performance Computer Systems: Do They Have a Future?," Institute for Terascale Simulation Distinguished Lecture Series, Lawrence Livermore National Laboratory, December 7, 2004.
45. "Generation of High-Performance Domain-Specific Languages from Component Libraries," Barr Systems Distinguished Lecture Series, Department of Computer Science, University of Florida, Gainesville, FL, January 28, 2005.
46. "Generation of High-Performance Domain-Specific Languages from Component Libraries," Distinguished Lecture Series, Department of Computer Science, University of California, San Diego, La Jolla, CA, February 14, 2005.
47. "Generation of High-Performance Domain-Specific Languages from Component Libraries," Distinguished Lecture Series, Department of Computer Science, Ohio State University, Columbus, OH, May 19, 2005.
48. "Generation of High-Performance Domain-Specific Languages from Component Libraries," Distinguished Lecture Series, Department of Computer Science, Indiana University, Bloomington, IN, May 20, 2005.