

David M. Nicol

Professor of Electrical and Computer Engineering
University of Illinois at Urbana-Champaign
457 Coordinated Science Laboratory
1308 West Main Street
Urbana, IL 61801

nicol@crhc.uiuc.edu
voice: (217) 244-1925
fax: (217) 244-5685

May 8, 2007

Education

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|-------|------------------------------|------------------------|------|
| Ph.D. | Computer Science | University of Virginia | 1985 |
| M.S. | Computer Science | University of Virginia | 1983 |
| B.A. | Mathematics (Phi Beta Kappa) | Carleton College | 1979 |

Employment

Professor of Electrical and Computer Engineering *University of Illinois at Urbana-Champaign*
September 2003–current.
Chair, Computer Engineering Group, August 2004–present.

Acting Director *ISTS*
May 2003–August 2003.

Assoc. Director for Research and Development *ISTS*
July 2002–May 2003.

Professor of Computer Science *Dartmouth College*
1998–2003.
Chair: July 2000–July 2002.
Sabbatical—Spring 2000: Oxford University Department of Computing .

Associate Professor of Computer Science *Dartmouth College*
1996–1998.
Vice Chair : July 1999-June 2000.

Associate Professor of Computer Science *College of William and Mary*
1992–1996.
Sabbatical—Fall 1993 through Spring 1994 : Institute for Computer Application Studies, and Carleton College.

Assistant Professor of Computer Science *College of William and Mary*
1987–1992.

Staff Scientist *ICASE, NASA Langley Research Center*
1985–1987.

Programmer Analyst *Control Data Corporation*
1979–1982.
Design Lead 1980-1982, CDC Site Representative ABLE System, Zweibruecken AFB West Germany, 1982.

Honors and Awards

Fellow of the ACM, 2006.

Best Paper Award, Conference on Principles of Advanced and Distributed Simulation, 2005.

Best Paper Award, IPSI-2004 Studencia Conference, 2004.

Fellow of the IEEE, 2003.

Marion and Jason Whiting Fellowship for study at Oxford University, 2000.

Best Paper Award, 9th Annual Conference on Parallel and Distributed Simulation, 1995.

Alumni Fellowship Award, given by the William and Mary Society of the Alumni for excellence in teaching, 1992.

Great Performer's Award (1980), Employee Excellence Award (1982) Control Data Corporation.

Consulting

- Consultant* *NASA*
Review proposed NASA-wide standard for Modeling and Simulation development and use. 2006.
- Consultant* *Department of Homeland Security*
Serve on review committee for DHS supported program in simulation based analysis of critical infrastructure inter-dependencies. 2006.
- Consultant* *Sandia National Laboratories*
Aid in design of distributed simulation language and toolset for internal Sandia use, study of distributed simulations of DoE complex enterprise systems, study of utility of fluid based communication models, design of wireless systems in critical infrastructure communications. 1996-2005.
- Consultant* *GRCI Corporation*
Assist system architect Emmet Beeker in GRCI contract proposal development for high performance analytic military simulations. 2000-2003.
- Developer* *Supercomputing 99, 00, 01, and 02 Conferences*
Developed, maintained and operated web sites for technical conference and tutorial submission, management, and evaluation. Provide technical assistance for authors, reviewers, and program committee. People I trained for the Supercomputing contract have turned this into a business.
- Consultant* *Universities Space Research Association*
Assisted USRA in preparation of \$5M/year proposal to NASA for development of a Research Center in Earth Sciences. 1999.
- Science Council* *Center of Excellence in Space Data and Information Science, NASA Goddard Space Center*
Served on CESDIS technical oversight board, making program recommendations to NASA Goddard. Member 1995-1999. Served as chair, 1998-1999.
- Consultant* *ATT Research*
Worked with Albert Greenberg and Boris Lubachevsky on problems in parallel simulation of computer and communication networks. 1992-1996.
- Consultant* *IBM Research*
Worked with Phil Heidelberger on problems in parallel simulation of computer and communication networks. 1992-1996.
- Consultant* *Institute for Computer Applications in Science and Engineering*
Did basic research in control and modeling of high performance computations motivated by problems of interest to NASA, particularly reliability modeling. Developed and managed a visitors program for ICASE in performance and reliability analysis. 1987-1996.

Research Interests

Analysis of computer and communication systems, particularly with respect to security (attacks, and defensive measures); quantitative methods for security evaluation. High performance computing, parallel algorithms. Modeling and simulation methodologies.

Funding

PI and co-PI on \$57,051,060 of awarded support since 1988.

AWARDED

- DHS**, \$500,000 2007-2007 PI
Policy Assessment and Verification in Survivable Process Control Systems, co-PI : William Sanders.
- DHS**, \$600,000 2007-2007 PI
End-to-End Assessment of Identity and Privacy Protection, co-PI : William Sanders.
- Air Force**, \$320,000 2006-2007 PI
Protected Software Adoption and Sustainment,
- NSF**, \$7,500,000 2005-2010 co-PI
Trustworthy Cyber Infrastructure for the Power Grid, co-PIs : William Sanders, Ravi Iyer, Roy Campbell, Peter Sauer.
- I3P**, \$240,000, 2005-2007 co-PI
Unifying Stakeholders and Security Programs to Address SCADA Vulnerability and Infrastructure Interdependencies
 co-PI : William Sanders.
- Boeing**, \$356,000, 2005-2009 co-PI
Algorithms for Quantifying Security and Survivability, co-PI : William Sanders.
- NSF**, \$360,000, 2002-2005 co-PI
Survivable Trust for Critical Infrastructure
 co-PIs : Sean Smith, Chris Hawblitzel .
- Mellon Foundation**, \$1,649,977, 2002-2003 co-PI
Transforming Academic Computing with Public Key Infrastructure
 PI : Sean Smith
 Co-PIs : Bob Brentrup, Larry Levine.
- Department of Justice**, \$18,000,000, 2002-2003 PI
Institute for Security Technology Studies.
Institute for Information Infrastructure Protection.
- Department of Justice**, \$15,000,000, 2000-2001 co-PI
Institute for Security Technology Studies.
 PI Susan Prager, Provost of Dartmouth College.
 Co-PIs : Lewis Duncan, George Cybenko, Joseph Henderson.
- Internet2 and ATT**, \$200,000, 2000-2002 co-PI
Internet2 PKILab.
 Co-PIs : Sean Smith, Larry Levine.
- DARPA**, \$1,700,000, 2000-2003. PI
Spatio-Temporal Dynamics of the Global Internet.
- NSF**, \$1,400,000, 1998-2003 PI
Systems Science for Physical Geometric Algorithms.
 NSF Research Infrastructure award.
 Co-PIs : David Kotz, Dan Rockmore, Bruce Donald.
- NSF**, \$224,000, 1998-2001 PI
A Fluid Methodology and Tool for Complex Large-Scale Networks.

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| <i>David M. Nicol (Funding)</i> | 5 |
| DARPA , \$3,310,931, 1996-1999 <i>Scalable Self-Organizing Simulations.</i> co-PI : Andrew Ogielski. | co-PI |
| NSF , \$1,500,000, 1995-1998 <i>Simulations Of Integrated Communications Systems</i> co-PIs: Andrew Ogielski, Richard Fujimoto, Diane Souvaine. | co-PI |
| NSF , \$125,918 <i>Acquisition of a Parallel Graphics Computer for Inter-disciplinary Research</i> | co-PI |
| NASA , \$20,000, 1995-1996 <i>Reliability Interface Tool Extension.</i> | PI |
| CACC , \$16,000, 1995-1996 <i>Integrated Modeling .</i> | PI |
| Center for Innovative Technology , \$39,989, 1995 <i>Integrated Environment for performance, reliability, and availability modeling</i> | PI |
| NASA , \$135,000, 1992-1995 <i>Parallel Algorithms for the Simulation and Analysis of Discrete Time Petri Nets.</i> | PI |
| NSF , \$131,000, 1992-1995 <i>Static and Dynamic Load Balancing of Parallel Discrete-Event Simulations on Distributed Memory Architectures.</i> | PI |
| NASA , \$57,500, 1989-1992 <i>Parallelization of Performance Tools.</i> | PI |
| NASA , \$110,000, 1990-1993 <i>The Reliability Estimation System Testbed.</i> | PI |
| NSF , \$104,000, 1989-1992 <i>Automated Methods for Run-Time Performance Optimization of Sparse and Irregular Numerical Applications.</i> | PI |
| US Army , \$178,000, 1988-1991 <i>Reliable Real-Time Processing of Sensor Data in Embedded Avionics Computing Systems .</i> Co-PIs : Steve Park, Phil Kearns. | co-PI |
| NASA , \$105,000, 1990-1992 <i>Writing Software for 2010.</i> co-PI: Keith Miller | co-PI |
| NASA , \$78,745, 1989-1990 <i>Parallelization of ERBE Data Processing.</i> | PI |
| Center for Innovative Technology , \$39,000, 1989-1990 <i>Parallelization of Performability Design Tools .</i> | PI |
| NASA , \$25,000, 1989-1990 <i>Hypercube Equipment Grant.</i> | PI |
| DFL Ltd. , \$25,000, 1988-1989 <i>Mapping Issues in Parallel Simulations.</i> | PI |

Publications

Author and co-author on 174 refereed journal and conference papers since 1984, and co-author of one widely used textbook.

PH.D. DISSERTATION

1. David M. Nicol
The Automated Partitioning of Simulations for Parallel Execution
Ph.D. thesis, University of Virginia, August 1985.

BOOKS

1. Jerry Banks, John Carson, Barry Nelson and David Nicol
Discrete-Event System Simulation.
Prentice-Hall, 3rd Edition (2000), 4th Edition (2005).

JOURNAL PUBLICATIONS

- J1. High Performance Simulation of Internet Worms
David M. Nicol
ACM Transactions on Modeling and Computer Simulation
January 2007 (to appear)
- J2. Efficient Path Authentication for Border Gateway Protocol (BGP) Security
Meiyuan Zhou, Sean W. Smith and David M. Nicol
Department of Defense Information Assurance Newsletter
9(3):14-18, Fall 2006
- J3. High Performance Simulation of Low-Resolution Network Flows
David M. Nicol and Guanhua Yan
Simulation : Transactions of the Society for Modeling and Simulation International
82(1):21-42, January 2006
- J4. RINSE : The Real-Time Immersive Network Simulation Environment for Network Security Exercises
M. Liljenstam, J. Liu, D.M. Nicol, Y. Yuan, G. Yan and C. Grier
Simulation : Transactions of the Society for Modeling and Simulation International
82(1):43-59, January 2006
- J5. Empirical Validation of Wireless Models in Simulations of Ad Hoc Routing Protocols
Simulation : Transactions of the Society for Modeling and Simulation International
81(4):307-323, 2005
- J6. Model-Based Evaluation: From Dependability to Security
David M. Nicol, William H. Sanders and Kishor S. Trivedi
IEEE Trans. on Dependability and Security
1(1):48-65, 2004
- J7. Evaluation of Efficient Security for BGP Route Announcements using Parallel Simulation
David M. Nicol, Sean Smith and Meiyuan Zhao
Simulation Practice and Theory
12(3-4):187-216, 2004
- J8. Utility Analysis of Network Simulators
David M. Nicol
International Journal of Simulation : Systems, Science, and Technology
2003

- J9. Discrete-Event Fluid Modeling of TCP Background Traffic
David M. Nicol and Guanhua Yan
ACM TOMACS
volume 14, number 3, 2004
- J10. On k-ary n-cubes : Theory and Applications
Weizhen Mao and David M. Nicol
Discrete Applied Mathematics
129(1):171-193, 2003
- J11. Composite Synchronization for Parallel Discrete Event Simulation
David Nicol and Jason Liu
IEEE Transactions on Parallel and Distributed Systems
13(5):433-446, May 2002
To appear.
- J12. A Geographically Distributed Enterprise System
Heidi Ammerlahn, David Nicol, Michael Goldsby and Michael Johnson
Future Generation Computer Systems
17(2):135-146, October 2000
- J13. Modeling the Global Internet
James Cowie, David Nicol and Andy Ogielski
IEEE Computing in Science and Engineering
1(1):42-50, Jan.-Feb. 1999
- J14. Simulation of Fluid Stochastic Petri Nets
Gianfranco Ciardo, David Nicol and Kishor Trivedi
IEEE Transactions on Software Engineering
25(2):207-217, March/April 1999
- J15. Performing Out-of-Core FFTs on Parallel Disk Systems
Tom Cormen and David Nicol
Parallel Computing
24(1):5-20, January 1998
- J16. Out-of-Core FFTs with Parallel Disks
Tom Cormen and David Nicol
ACM Performance Evaluation Review
25(3):3-12, December 1997
- J17. Automated Parallelization of Discrete State-space Generation
David Nicol and Gianfranco Ciardo
Journal of Parallel and Distributed Computing
volume 47, 47 1997, pp. 153-167
- J18. Balancing Contention and Synchronization on the Intel Paragon
Shahid Bokhari and David Nicol
IEEE Concurrency
5(2):74-84, April-June 1997
- J19. Transformation of ns TCP Models to TED
Brian Premore and David Nicol
ACM Performance Evaluation Review
25(4):40-48, March 1998
- J20. Fluid Stochastic Petri Nets: Theory Applications and Solution Techniques
Graham Horton, David Nicol, V. Kulkarni and Kishor Trivedi
European Journal of Operational Research
105(1):184-201, February 1998

- J21. Distributed State Space Generation of Discrete-State Stochastic Models
Gianfranco Ciardo, David Nicol and Josh Gluckman
INFORMS Journal on Computing
10(1):82-93, January 1998
- J22. Conference Program Management Using the Internet
David Nicol
IEEE Computer
29(3):112-113, March 1996
- J23. Parallelized Direct Execution Simulation of Message Passing Programs
Phillip Dickens, David Nicol and Philip Heidelberger
IEEE Transactions on Parallel and Distributed Systems
7(10):1090-1105, October 1996
- J24. Analytic Comparison of Bounded Time Warp and YAWNS
Phillip Dickens, David Nicol, Paul Reynolds and Mark Duva
ACM Transactions on Modeling and Computer Simulation
6(4):297-320, October 1996
- J25. Parallel Execution for Serial Simulators
David Nicol and Philip Heidelberger
ACM Transactions on Modeling and Computer Simulation
6(3):210-242, July 1996
- J26. Efficient Bulk-Loading of Gridfiles
Scott Leutenegger and David Nicol
IEEE Transactions on Knowledge and Data Engineering
9(3):410-420, May/June 1997
- J27. Static Assignment of Complex Tasks using Stochastic Majorization
David Nicol, Rahul Simha and Don Towsley
IEEE Transactions on Computers
45(6):730-741, June 1996
- J28. A Comparative Study of Parallel Algorithms for Simulating Continuous Time Markov Chains
David Nicol and Philip Heidelberger
ACM Transactions on Modeling and Computer Simulation
5(4):326-354, October 1995
- J29. On Bottleneck Partitioning of k -ary n -cubes
David Nicol and Weizhen Mao
Parallel Processing Letters
6(6):389-399, June 1996
- J30. Isomorphic Routing on Torodial Meshes
Weizhen Mao and David Nicol
ORSA Journal on Computing
8(1):63-73, Winter 1996
- J31. Integrating Reliability Analysis with a Performance Tool
David Nicol, Dan Palumbo and Michael Ulrey
Communications in Reliability Maintainability and Supportability
- J32. Automated Parallel Simulation of Timed Petri-Nets
David Nicol
Journal of Parallel and Distributed Computing
29(1):60-74, August 1995

- J33. Non-committal Barrier Synchronization
David Nicol
Parallel Computing
volume 21, 1995, pp. 529-549
- J34. Reliability Analysis of Complex Models Using SURE Bounds
David Nicol and Dan Palumbo
IEEE Transactions on Reliability
44(1):46-53, March 1995
- J35. Rectilinear Partitioning of Irregular Data Parallel Computations
David Nicol
Journal of Parallel and Distributed Computing
23(2):119-134, November 1994
- J36. Massively Parallel Algorithms for Trace-Driven Cache Simulations
David Nicol, Albert Greenberg and Boris Lubachevsky
IEEE Transactions on Parallel and Distributed Systems
5(8):849-859, August 1994
- J37. On the Minimum of a Set of Independent Geometrically Distributed Random Variables
Gianfranco Ciardo, David Nicol and Larry Leemis
Statistics and Probability Letters
volume 23, 1995, pp. 313-326
- J38. Assignment of Processors for Pipeline Computations
Alok Choudhary, Bhagirath Harahari, David Nicol and Rahul Simha
IEEE Transactions on Parallel and Distributed Systems
5(4):439-445, April 1994
- J39. A Sweep Algorithm for Massively Parallel Simulation of Circuit-Switched Networks
Bruno Gaujal, Albert Greenberg and David Nicol
Journal of Parallel and Distributed Computing
18(4):484-500, August 1993
- J40. Optimistic Parallel Simulation of Markov Chains Using Uniformization
David Nicol and Philip Heidelberger
Journal of Parallel and Distributed Computing
18(4):395-410, August 1993
- J41. Parallel Simulation Today
David Nicol and Richard Fujimoto
Annals of Operations Research
volume 53, December 1994, pp. 249-286
- J42. Conservative Parallel Simulation of Markov Chains Using Uniformization
Philip Heidelberger and David Nicol
IEEE Transactions on Parallel and Distributed Systems
4(8):906-921, August 1993
- J43. The Cost of Conservative Synchronization in Parallel Discrete-Event Simulations
David Nicol
Journal of the ACM
40(2):304-333, April 1993
- J44. Conservative Parallel Simulation of Priority Class Queueing Networks
David Nicol
IEEE Transactions on Parallel and Distributed Systems
3(3):294-303, May 1992

- J45. Inflated Speedups in Parallel Simulations via `malloc()`
David Nicol
International Journal on Simulation
volume 2, , pp. 413-426
- J46. Improved Algorithms for Mapping Pipelined and Parallel Algorithms
David Nicol and David O'Hallaron
IEEE Transactions on Computers
40(3):295-306, March 1991
- J47. Estimating the Probability of Failure When Testing Reveals No Failures
Keith Miller, L. Morell, David Nicol, Richard Noonan, Steve Park, Branson Murrill and
Jeff Voas.
IEEE Transactions on Software Engineering
18(1):33-42, January 1992
- J48. Performance Bounds on Self-Initiating Parallel Discrete Event Simulations
David Nicol
ACM Transactions on Modeling and Computer Simulation
1(1):24-50, 1990
- J49. A Multi-stage Linear Array Assignment Problem
Rex Kincaid, David Nicol, Dana Richards and Doug Shier
Operations Research
38(6):993-1005, Nov.-Dec. 1990
- J50. An Analysis of Scatter Decomposition
David Nicol and Joel Saltz
IEEE Transactions on Computers
39(11):1337-1345, November 1990
- J51. Parallelization of Sparse Dynamic Programming Problems
David Nicol
ORSA Journal on Computing
2(2):162-173, Spring 1990
- J52. Optimal Dynamic Remapping of Data Parallel Computations
David Nicol and Paul Reynolds, Jr.
IEEE Transactions on Computers
39(2):206-219, February 1990
- J53. Delay Point Schedules for Irregular Parallel Computations
David Nicol, Joel Saltz and James Townsend
International Journal on Parallel Programming
18(1):69-90, February 1989
- J54. Optimal Partitioning of Random Programs Across Two Processors
David Nicol
IEEE Transactions on Software Engineering
15(2):134-141, February 1989
- J55. Dynamic Remapping of Parallel Computations with Varying Resource Demands
David Nicol and Joel Saltz
IEEE Transactions on Computers
37(9):1073-1087, September 1988
- J56. Problem Size, Parallel Architecture, and Optimal Speedup
David Nicol and Frank Willard
Journal of Parallel and Distributed Computing
volume 5, August 1988, pp. 404-420

- J57. Expected Performance of m-Solution Backtracking
David Nicol
SIAM Journal on Computing
17(1):114-127, February 1988
- J58. Reduction of the Effects of the Communication Delays in Scientific Algorithms on
Message Passing MIMD Architectures
Joel Saltz, Vijay Naik and David Nicol
SIAM Journal on Scientific and Statistical Computing
volume 8, number 1, January 1987

CONFERENCE PUBLICATIONS

- C1. Tradeoffs Between Model Abstraction, Execution Speed, and Accuracy
Proceedings of the European Modeling and Simulation Symposium
Barcelona, Spain, October 2006, pp. 13-20
- C2. Top Speed of Flash Worms Revisited
Proceedings of the European Modeling and Simulation Symposium
Barcelona, Spain, October 2006, pp. 21-30
- C3. The Impact of Stochastic Variability on Worm Detection
David M. Nicol
Proceedings of ACM Worm 2006
Alexandria, VA, November 2006
- C4. Implementation and Instrumentation of a Flash-Worm
Steve Hanna and David M. Nicol
Proceedings of 2006 DETER Community Workshop
Arlington, VA, June 2006, pp. 91-94
- C5. Detection of Nuclear Material at Border Crossings by Correlating Movement and
Radtion Measurements
David M. Nicol, Rose Tsang, Heidi Ammerlahn and Michael Johnson
Proceedings of the 2006 Winter Simulation Conference
Monterey, CA, December 2006, pp. 536-544
- C6. Sensor Fusion Algorithms for the Detection of Nuclear Material at Border Crossings
David M. Nicol, Rose Tsang, Heidi Ammerlahn and Michael Johnson
*Sensors, and Command, Control, Communications, and Intelligence (C3I) Technologies
for Homeland Security and Homeland Defense V. Edited by Carapezza, Edward M.. Pro-
ceedings of the SPIE*
Orlando, FL, May 2006, pp. 62011O
- C7. SCADA Cyber-security Testbed Development
Proceedings of the 2006 North American Power Symposium
Carbondal, IL, September 2006
- C8. Aggregated Path Authentication for Efficient BGP Security
M. Zhao, S. Smith and D. Nicol
*Proceedings of the 2005 ACM Conference on Computer and Communications Security
(CCS 2005)*
Alexandria, VA, November 2005
- C9. Evaluating the Performance Impact of PKI on BGP Security
M. Zhao, S. Smith and D. Nicol
4th Annual PKI R&D Workshop
Gaithersburg, MD, April 2005
- C10. Simulation of Binary Code Protection
D. Nicol and H. Okhravi
Proceedings of 2005 Winter Simulation Conference
Orlando, FL, December 2005
- C11. Advanced Concepts in Network Simulation
D. Nicol, M. Liljenstam and J. Liu
Proceedings of 2005 Winter Simulation Conference
Orlando, FL, December 2005

- C12. Models and Analysis of Active Worm Defense
D. Nicol
Proceedings of Mathematical Methods, Models and Architectures for Computer Networks Security Workshop
St. Petersburg, Russia, September 2005 (To appear)
- C13. Simulation of Network Traffic at Coarse Time-scales
D.M. Nicol and G. Yan
Proceedings of the 2005 Conference on Principles of Advanced and Distributed Simulation
Monterey, CA, June 2005
- C14. RINSE: the Real-time Interactive Network Simulation Environment for Network Security Exercises
M. Liljenstam, D.M. Nicol, Y. Yuan, G. Yan and J. Liu
Proceedings of the 2005 Conference on Principles of Advanced and Distributed Simulation
Monterey, CA, June 2005
- C15. Simulation Analysis of Virtual Geographic Routing
David M. Nicol, Michael E. Goldsby and Michael M. Johnson
Proceedings of the 2004 Winter Simulation Conference
Washington, DC, December 2004
- C16. Diagnostics for Causes of Packet Loss in a High Performance Data Transfer System
P. Dickens and D. Nicol
Proceedings of the 18th International Parallel and Distributed Processing Symposium (IPDPS 2004)
IEEE Computer Society, Santa Fe, New Mexico
2004
- C17. On-Demand Computation of Policy Based Routes for Large-Scale Network Simulation
Michael Liljenstam and David M. Nicol
Proceedings of the 2004 Winter Simulation Conference
Washington, DC, December 2004
- C18. Evaluation of Secure Peer-to-Peer Overlay Routing for Survivable SCADA Systems
Jeffery J. Farris and David M. Nicol
Proceedings of the 2004 Winter Simulation Conference
Washington, DC, December 2004
- C19. Fast Model-Based Penetration Testing
James Lyons, David M. Nicol and Sankalp Singh
Proceedings of the 2004 Winter Simulation Conference
Washington, DC, December 2004
- C20. Vulnerability of BGP to Policy Attacks
David M. Nicol, Steven Ko, Jintae Kim and George Riley
Proceedings of the 2004 Winter Simulation Conference
Washington, DC, December 2004
- C21. Comparing Passive and Active Worm Defenses
Michael Liljenstam and David M. Nicol
Proceedings of the 2004 Conference on Quantitative Evaluation of Systems (QEST)
Univ. of Twente, Netherlands, October 2004
- C22. Simulation Validation Using Direct Execution of Wireless Ad-hoc Routing Protocols
Jason Liu, Yougu Yuan, David M. Nicol, Robert S. Gray, Calvin C. Newport, David F. Kotz and Luiz Felipe Perrone
Proceedings of the 2004 Conference on Parallel and Distributed Simulation
Kunstein, Austria, May 2004

- C23. Development of an Internet Backbone Topology for Large-Scale Network Simulations
Micheal Liljenstam, Jason Liu and David M. Nicol
Proceedings of the 2003 Winter Simulation Conference
New Orleans, LA, December 2003, pp. 694-704
- C24. Modeling and Simulation Best Practices for Wireless Ad-hoc Networks
Luis Felipe Perrone, Yougu Yuan and David M. Nicol
Proceedings of the 2003 Winter Simulation Conference
New Orleans, LA, December 2003, pp. 685-693
- C25. Simulation of Large-Scale Networks Using SSF
David M. Nicol, Jason Liu and Micheal Liljenstam
Proceedings of the 2003 Winter Simulation Conference
New Orleans, LA, December 2003, pp. 650-657
- C26. Multiscale Modeling and Simulation of Worm Effects on the Internet Routing Infrastructure
D. M. Nicol, M. Liljenstam and J. Liu
Proceedings of the Performance Tools 2003 Conference
Urbana, IL, September 2003
- C27. Simulating Realistic Network Worm Traffic for Worm Warning System Design and Testing
M. Liljenstam, D. M. Nicol, V. Berk and R. Gray
Proceedings of the 2003 Workshop on Rapid Malcode (WORM)
Washington, DC, October 2003, pp. 24-33
- C28. An Implementation of the SSF Scalable Simulation Framework on the Cray MTA
R. Henry, S. Kahan, J. Liu and David Nicol
2003 Conference on Parallel and Distributed Simulation
San Diego, CA, June 2003
- C29. Utility Analysis of Parallel Simulation
David M. Nicol
2003 Conference on Parallel and Distributed Simulation
San Diego, CA, June 2003
- C30. Simulation of Cyberattacks with Applications in Homeland Defense Training
Bill Brown, Andrew Cutts, Dennis McGrath, David M. Nicol, Timothy P. Smith and Brett Toefel
Proceedings of the AeroSense 2003 Conference
Orlando, FL, March 2003
- C31. Using Simulation to Understand Dynamic Connectivity at the Core of the Internet
David M. Nicol, Brian Premore and Andy Ogielski
Proceedings of UKSim 2003
Cambridge University, England, April 2003
- C32. Scalability of Garbage Collection in Java-based Discrete-Event Simulators
David M. Nicol
Proceedings of UKSim 2003
Cambridge University, England, April 2003
- C33. Scalability of Network Simulators Revisited
David M. Nicol
Proceedings of the Communication Networks and Distributed Systems Modeling and Simulation Conference
Orlando, FL, February 2003

- C34. A Mixed Abstraction Level Simulation Model of Large-Scale Internet Worm Infestations
M. Liljenstam, Y. Yuan, B. Premore and D. Nicol
Proceedings of the Tenth IEEE/ACM Symposium on Modeling, Analysis, and Simulation of Computer Telecommunication Systems
Fort Worth, TX, October 2002
- C35. Analysis of Composite Synchronization
David Nicol
2002 Conference on Parallel and Distributed Simulation
Washington, D.C., May 2002, pp. 115-124
- C36. Lookahead Revisited in Parallel Wireless Simulations
Jason Liu and David Nicol
2002 Conference on Parallel and Distributed Simulation
Washington, D.C., May 2002, pp. 79-88
- C37. Towards High Performance Modeling of the 802.11 Wireless Protocol
Jason Liu, David Nicol, Felipe Perrone and Michael Liljenstam
2001 Winter Simulation Conference
Arlington, VA , December 2001
- C38. Discrete-Event Fluid Modeling of TCP
David Nicol
2001 Winter Simulation Conference
Arlington, VA , December 2001
- C39. Challenges in Using Simulation to Explain Global Routing Instabilities
David Nicol
2002 Conference on Grand Challenges in Simulation
San Antonio, TX, January 2002
- C40. Simulation Modeling of Large-Scale Ad-hoc Sensor Networks
Jason Liu, David Nicol, Felipe Perrone, Michael Liljenstam, Chip Elliot and Dave Pearson
European Interoperability Workshop 2001
London England, June 2001
- C41. Learning Not to Share
David Nicol and Jason Liu
2001 Conference on Parallel and Distributed Simulation
Lake Arrowhead,CA, May 2001, pp. 26-55
- C42. Consistent Modeling of Distributed Mutual Exclusion Protocol Using Optimistic Synchronization
Malcolm Low and David Nicol
2001 Conference on Parallel and Distributed Simulation
Lake Arrowhead,CA, May 2001, pp. 137-144
- C43. Lock-free Scheduling of Logical Processes in Parallel Simulation
Jason Liu and David Nicol
2001 Conference on Parallel and Distributed Simulation
Lake Arrowhead, CA, May 2000, pp. 22-24
- C44. Cost/Benefit Analysis of Interval Jumping in Power-Control Simulation
David Nicol and Felipe Perrone
2000 Winter Simulation Conference
Orlando, FL, December 2000, pp. 425-431
- C45. Using N -body Algorithms for Interference Computation in Wireless Cellular Simulations
Felipe Perrone and David Nicol
2000 MASCOTS Conference
San Fransisco, CA, August 2000, pp. 49-56

- C46. Safe Time-stamps and Large Scale Modeling
David Nicol, James Cowie and Jason Liu
2000 Workshop on Parallel and Distributed Simulation
Bologna, Italy, May 2000, pp. 71-78
- C47. An Investigation of Out-Of-Core Parallel Discrete-Event Simulation
Anna Poplawski and David Nicol
1999 Winter Simulation Conference
Phoenix, AZ, December 1999, pp. 524-530
- C48. Strategic Directions in Simulation Research
David Nicol, Osman Balci, Richard Fujimoto, Paul Fishwick, Pierre L'Ecuyer and Roger Smith
1999 Winter Simulation Conference
Phoenix, AZ, December 1999, pp. 1509-1520
- C49. Towards Realistic Million-Node Internet Simulations
James Cowie, David Nicol, Hongbo Liu, Jason Liu and Andy Ogielski
1999 Int'l Conference on Parallel and Distributed Processing Techniques and Applications
Las Vegas, June 1999
- C50. Modeling 100,000 Nodes and Beyond: Self-Validating and Design
Andrew Ogielski, James Cowie and David Nicol
DARPA/NIST and Workshop on and Validation of Large-Scale Network and Simulation Models
Reston, VA, May 1999
- C51. Fluid-based Simulation of Communication Networks using SSF
David Nicol, Michael Goldsby and Michael Johnson
1999 SCS European Simulation Conference
Erlangen, Germany, October 1999
- C52. Performance Prediction of a Parallel Simulator
Jason Liu, David Nicol, Brian Premore and Anna Poplawski
1999 Workshop on Parallel and Distributed Simulation (PADS)
Atlanta, GA., May 1999, pp. 156-164
- C53. **Nops**: A Conservative Simulation Engine for TeD
Anna Poplawski and David Nicol
1998 Workshop on Parallel and Distributed Simulation
Banff, CA, June 1998, pp. 180-187
- C54. Rapid Simulation of Wireless Systems
Felipe Perrone and David Nicol
1998 Workshop on Parallel and Distributed Simulation
Banff, Canada, June 1998, pp. 170-177
- C55. Scalability, Locality, Partitioning, and Synchronization
David Nicol
1998 Workshop on Parallel and Distributed Simulation
Banff, Canada, June 1998, pp. 4-11
- C56. IDES: A Java-based Distributed Simulation Engine
David Nicol, Michael Johnson and Ann Yoshimura
1998 International Workshop on Modeling Analysis and Simulation of Computer and Telecommunication Systems (MASCOTS)
Montreal, Canada 1998, pp. 233-240

- C57. Multiprocessor Out-of-Core FFTs with Distributed Memory and Parallel Disks
Tom Cormen, David Nicol and Jake Wegmann
1997 Workshop on Parallel IO
November 1997, pp. 68-78
- C58. Discrete-Event Simulation of Fluid Stochastic Petri Nets
Gianfranco Ciardo, David Nicol and Kishor Trivedi
1997 Petri Nets and Performance Modeling Symposium
1997, pp. 217-225
- C59. Modeling TCP with the TeD Parallel Simulation Language
Brian Premore and David Nicol
1997 Winter Simulation Conference
Atlanta, GA, December 1997, pp. 437-443
- C60. The IDES Framework: A case study in Development of a Parallel Simulation System
David Nicol, Michael Johnson and Anne Yoshimura
1997 Winter Simulation Conference
Atlanta, GA, December 1997, pp. 93-99
- C61. The Dark Side of Risk (what your mother never told you about Time Warp)
David Nicol and Jason Liu
1997 Workshop on Parallel and Distributed Simulation
Lockenhaus, Austria, May 1997, pp. 188-195
- C62. Performance Modeling of the IDES Framework
David Nicol, M. Johnson, M. Goldsby and A. Yoshimura
1997 Workshop on Parallel and Distributed Simulation
Lockenhaus, Austria, June 1997, pp. 38-45
- C63. Principles of Conservative Parallel Simulation
David Nicol
1996 Winter Simulation Conference
Coronado, CA, December 1996, pp. 128-135
- C64. Parallel Multidisciplinary Design Optimization
Weizhen Mao and David Nicol
8th IASTED-ISMM International Conference on Parallel and Distributed Computing and Systems
1996, pp. 91-93
- C65. Experiments in Automated Load Balancing of Parallel Simulation
Linda Wilson and David Nicol
1996 Workshop on Parallel and Distributed Simulation
Philadelphia, PA, May 1996, pp. 4-11
- C66. On Extending More Parallelism to Serial Simulators
Philip Heidelberger and David Nicol
1996 Workshop on Parallel and Distributed Simulation
Philadelphia, PA, May 1996, pp. 202-206
- C67. Parallelizable Execution-Driven Simulation of Threaded Distributed Memory Parallel Computations
David Nicol and Jason Liu
1996 MASCOTS Conference
San Jose, CA 1996, pp. 174-178
- C68. Building Parallel Simulations from Serial Simulators
Philip Heidelberger and David Nicol
1996 MASCOTS Conference
Santa Barbara, CA 1996, pp. 2-4

- C69. Combinatorics of k -ary n -cubes with Applications to Partitioning
Weizhen Mao and David Nicol
Proceedings for the 4th International Conference for Young Computer Scientists
Beijing, Peoples Republic of China 1995, pp. 662-669
- C70. A Heuristic for Partitioning Parallel Computations
Weizhen Mao and David Nicol
7th IASTED International Conference on Parallel and Distributed Computing and Systems
Washington, D.C. 1995, pp. 295-297
- C71. Automated Load Balancing in SPEEDES
Linda Wilson and David Nicol
1995 Winter Simulation Conference
Washington, D.C., December 1995, pp. 590-596
- C72. Towards A Thread-Based Parallel Direct Execution Simulator
Phillip Dickens, David Nicol, Matthew Haines and Piyush Mehotra
29th Hawaii Int'l Conf. of System Science
1995
- C73. Case Study: Safety Analysis of the NASA/Boeing Fly-By-Light Airplane Using a New Reliability Tool
Mike Ulrey, David Nicol and Dan Palumbo
1996 Reliability Availability and Maintainability Symposium
January 1996
- C74. On Extending Parallelism to Serial Simulations
David Nicol and Philip Heidelberger
1995 Workshop on Parallel and Distributed Simulation
Lake Placid, NY, June 1995, pp. 60-67
- C75. Empirical Study of Parallel Trace-Driven Cache Simulators
David Nicol and Eric Carr
1995 Workshop on Parallel and Distributed Simulation
Lake Placid, NY, June 1995, pp. 166-169
- C76. Global Virtual Time and Distributed Synchronization
Jeff Steinman, David Nicol, Craig Lee and Linda Wilson
1995 Workshop on Parallel and Distributed Simulation
Lake Placid, NY, June 1995, pp. 139-148
- C77. Parallelized Network Simulators for Message-Passing Parallel Programs
Phillip Dickens, David Nicol and Philip Heidelberger
1995 MASCOTS Conference
January 1995, pp. 18-20
- C78. Timing Simulation of Paragon Codes Using Workstation Clusters
Phillip Dickens, Philip Heidelberger and David Nicol
1994 Winter Simulation Conference
Orlando, FL, December 1994, pp. 1347-1353
- C79. A Graphical Tool for Reliability and Failure-Mode-Effects Analysis
David Nicol, Dan Palumbo and Mike Ulrey
1995 Reliability and Maintainability Symposium
1995, pp. 74-81
- C80. Optimal Multiphase Complete Exchange on Circuit-Switched Hypercube Architectures
David Nicol and Shahid Bokhari
1994 ACM SIGMETRICS Conference
Nashville, TN, May 1994, pp. 252-260

- C81. A Distributed Memory LAPSE:Parallel Simulation of Message-Passing Programs
Phillip Dickens, David Nicol and Philip Heidelberger
1994 Workshop on Parallel and Distributed Simulation
Edinburgh, Scotland, July 1994, pp. 32-38
- C82. Efficient Massively Parallel Simulation of Dynamic Channel Assignment Schemes for Wireless Cellular Communications
Albert Greenberg, David Nicol, Boris Lubachevsky and Paul Wright
1994 Workshop on Parallel and Distributed Simulation
Edinburgh, Scotland, July 1994, pp. 187-194
- C83. The Impact of Adding Aggressiveness to a Non-Aggressive Windowing Protocol
Phillip Dickens, David Nicol, Paul Reynolds, Jr. and Mark Duva
1993 Winter Simulation Conference
San Diego, CA, December 1993, pp. 731-739
- C84. Parallel Simulation of Markovian Queueing Networks Using Adaptive Uniformization
David Nicol and Philip Heidelberger
1993 ACM SIGMETRICS Conference
Santa Clara, CA, May 1993, pp. 135-145
- C85. Parallel Algorithms for Simulating Continuous Time Markov Chains
David Nicol and Philip Heidelberger
1993 Workshop on Parallel and Distributed Simulation
San Diego, CA, May 1993, pp. 11-18
- C86. Optimistic Global Synchronization for Parallel Discrete-Event Simulations
David Nicol
1993 Workshop on Parallel and Distributed Simulation
San Diego, CA, May 1993, pp. 27-34
- C87. REST: A Parallelized Reliability Estimation System
David Nicol, Adam Rifkin and Dan Palumbo
1993 Reliability and Maintainability Symposium
Atlanta, GA, January 1993, pp. 436-442
- C88. Load Balancing Using Stochastic Majorization
David Nicol, Rahul Simha and Don Towsley
1993 INFOCOMM
1993, pp. 1306-1313
- C89. MIMD Parallel Simulation of Circuit Switched Communication Networks
David Nicol, Albert Greenberg and Boris Lubachevsky
1992 Winter Simulation Conference
Arlington, VA, December 1992, pp. 629-636
- C90. State of the Art in Parallel Simulation
Richard Fujimoto and David Nicol
1992 Winter Simulation Conference
Arlington, VA, December 1992, pp. 246-254
- C91. Communication Efficient Global Load Balancing
David Nicol
1992 Scalable High Performance Computing Conference
Williamsburg, VA 1992, pp. 292-299
- C92. Massively Parallel Algorithms for Trace-Driven Cache Simulations
David Nicol, Albert Greenberg and Boris Lubachevsky
1992 Workshop on Parallel and Distributed Simulation
Newport Beach, CA 1992, pp. 3-11

- C93. Simultaneous Parallel Simulations of Continuous Time Markov Chains at Multiple Parameter Settings
Philip Heidelberger and David Nicol
1991 Winter Simulation Conference
Phoenix, AZ, December 1991, pp. 602-607
- C94. Parallel Simulation of Timed Petri-Nets
David Nicol and Subhas Roy
1991 Winter Simulation Conference
Phoenix, AZ, December 1991, pp. 574-583
- C95. A Conservative Approach to the Parallelization of the Sharks World Simulation
David Nicol and Scott Riffe
1990 Winter Simulation Conference
New Orleans, LA, December 1990, pp. 186-190
- C96. Generation and Analysis of Large Reliability Models
Dan Palumbo and David Nicol
Proceedings of IEEE/AIAA Ninth Digital Avionics Systems Conference
Virginia Beach, VA 1990, pp. 350-354
- C97. Performance Analysis of Massively Parallel Discrete-Event Simulations
David Nicol
SIGPLAN Symposium on the Practice and Principles of Parallel Programming
Seattle, WA, March 1990
- C98. Efficient Aggregation of Multiple LPs in Distributed Memory Parallel Simulations
David Nicol, Chris Micheal and Patrick Inouye
1989 Winter Simulation Conference
Washington, D.C., December 1989, pp. 680-685
- C99. Scattered Decomposition and the Partitioning of Loops and Domains
Joel Saltz, David Nicol and Harry Berryman
1989 SIAM Conference on Parallel Processing for Scientific Computing
1989
- C100. Accurate Modeling of Parallel Scientific Computations
David Nicol and James Townsend
1989 ACM SIGMETRICS Conference
Berkeley, CA, May 1989, pp. 165-170
- C101. High Performance Parallelized Discrete Event Simulation of a Stochastic Queueing Network
David Nicol
1988 Winter Simulation Conference
San Diego, CA, December 1988, pp. 306-314
- C102. The Implementation of a Parallelized Simulation of Queueing Networks using Fortran and Abstract Data Types
Keith Miller and David Nicol
1988 Winter Simulation Conference
San Diego, CA, December 1988, pp. 333-338
- C103. Parallel Discrete-Event Simulation of Stochastic Queueing Networks
David Nicol, proceedings of and the
ACM SIGPLAN Conference on Parallel Programming
New Haven, CT, July 1988, pp. 124-137

- C104. Principles of Runtime Support for Parallel Processors
Ravi Mirchandaney, Joel Saltz, Roger Smith and Kay Crowley and David Nicol
1988 International Conference on Supercomputing
Saint Malo, France , July 1988, pp. 140-152
- C105. Methods for Automated Problem Mapping
Joel Saltz, David Nicol, Ravi Mirchandaney, Roger Smith and Kay Crowley
Proceedings IMACS 1988 12th World Congress on Scientific Computation
1988
- C106. The PARTY Parallel Runtime System
Joel Saltz, Ravi Mirchandaney, Roger Smith and Kay Crowley and David Nicol
SIAM Conference on Parallel Processing for Scientific Computation
Los Angles, CA 1987, pp. 335-345
- C107. Performance Issues for Distributed Battlefield Simulations
David Nicol
1987 Winter Simulation Conference
Atlanta, GA, December 1987, pp. 624-628
- C108. Problem Size, Parallel Architecture, and Optimal Speedup
David Nicol and Frank Willard
1987 International Conference on Parallel Processing
St. Charles, IL, August 1987, pp. 347-354
- C109. An Optimal Repartitioning Decision Policy
David Nicol and Paul Reynolds
1985 Winter Simulation Conference
San Francisco, CA, December 1985, pp. 493-497
- C110. Problem Oriented Protocol Design
David Nicol and Paul Reynolds
1984 Winter Simulation Conference
Dallas, TX, December 1984, pp. 471-474

BOOK CHAPTERS

- BC1. Problem Characteristics and Parallel Simulation
David Nicol
Parallel Computing : Paradigms and Applications
International Thomson Computer Press
1995, pp. 498-513
- BC2. Dynamic Remapping of Time-stepped Parallel Simulations
David Nicol
Distributed Simulation 1989
SCS Simulation Series
1989, pp. 121-125
- BC3. Parallel Evaluation of a Dynamic Programming Equation Using Optimistic Evaluation
David Nicol
Impacts of Recent Computer Advances on Operations Research
North-Holland
1989, pp. 120-130
- BC4. Mapping a Battlefield Simulation onto Message-Passing Parallel Architectures
David Nicol
Distributed Simulation 1988
SCS Simulation Series
1988, pp. 141-146

- BC5. Statistical Methodologies for the Control of Dynamic Remapping
Joel Saltz and David Nicol
Parallel Processing and Medium Scale Multiprocessors
SIAM Publications, Philadelphia, PA
1989, pp. 35-57
- BC6. A Statistical Approach to Dynamic Partitioning
David Nicol and Paul Reynolds
Distributed Simulation 1985
SCS Simulation Series
1985, pp. 53-56

Public Domain Software

I have over the years developed several pieces of software which I have placed in the public domain.

1. DaSSF
 The Dartmouth implementation of the Scalable Simulation Framework. A high performance parallel simulation kernel with C++ API, highly portable. It is in active use in DoE laboratories, industry (e.g. Motorola), and academic research projects. It is most commonly used to model communication and computer systems.
2. SSFNet
 SSFNet is a public domain body of software for the modeling and simulation of computer systems, using the SSF Java API. My research team has contributed significantly to the software at this site.
3. WIMPE
 In 1996, in conjunction with my role as Program Chair of the ACM Sigmetrics conference I developed what I believe was the first web-based system for paper submission and reviewing management. I parameterized this system to be configurable for other conferences, called it Web Interface for Managing Programs Electronically (WIMPE), and made it available for use by others. In its 6th revision now, at any given time there are half a dozen conferences using it.
4. RITE
 The Reliability Interface Tool Extension (RITE) is a program written to support path-based analysis of complex hardware systems. It is designed to be integrated with a system design tool such as BoNES Designer and ADEPT (it has been integrated with both of these). RITE provides a master-slave interface to the system modeling tool, where RITE is master. It queries the system modeling tool for information about the model, information that allows RITE to construct path-based Markovian analysis of the probability of failure.
5. NON-COMMITAL SYNCHRONIZATION BARRIER
 This is code that implements an algorithm I developed of a barrier synchronization, with the twist that a process can change its mind and back out of the barrier in response to receipt of a new message. It is tricky coding, and so I make available source code that is parameterized to work with different message passing libraries. While developed in the early 1990's, this code still gets a few downloads a month by sources other than bots.

Selected Invited Talks

KEYNOTE ADDRESSES

- 2005: *Models and Analysis of Active Worm Defense*, International Workshop on Mathematical Methods, Models and Architectures for Computer Networks Security, St. Petersburg, Russia.
- 2003: *Multiscale Modeling and Simulation of Worm Effects on the Internet Routing Infrastructure*, Performance Tools 2003 Conference, Urbana, IL.
- 2003: *Network Security Research using High Performance Simulation*, 7th Workshop on Distributed Supercomputing (SOS7), Durango, CO.
- 1999: *Simulation : The 3rd Leg of Science*, CESDIS Workshop on Simulation, NASA Goddard Research Center, Greenbelt, MD.
- 1997: *Parallel Simulation : So Who Cares?*, 1997 Conference on Parallel and Distributed Simulation. Lockenhaus, Austria.
- 1997: *Parallel Simulation : Past, Present, Future*, Annual Simulation Symposium, Atlanta, GA.

SELECTED INVITED PRESENTATIONS

- 2001 : *Discrete Event Fluid Modeling of TCP*, University of California, San Diego; Information Sciences Institute.
- 2001 : *Composite Synchronization for Parallel Discrete-Event Simulation*, Rensselaer Polytechnical Institute.
- 2000 : *Fluid Modeling of TCP*, Oxford University; University of Vienna.
- 1999 : *Scalable Modeling and Analysis of Communication Networks*, Univ. of Maryland.
- 1998 : *DaSSF: A High Performance Parallel Network Simulator*, Royal Institute of Technology, Stockholm, Sweden.
- 1996 : *High Performance Tools for Simulating Complex Discrete Systems*, IBM TJ Watson Research Center, ATT Labs.
- 1994 : *Massively Parallel Simulation of Communication Networks*, University of Minnesota; University of Wisconsin.
- 1994 : *A Distributed Memory LAPSE: Parallel Simulation of Message-Passing Programs*, University of Maryland; University of Illinois Champagne-Urbana; University of Arizona, MITRE Corporation.
- 1993 : *Massively Parallel Discrete-Event Simulation*, Royal Institute of Technology, Stockholm, Sweden.
- 1992 : *Parallel Simulation of Circuit-Switch Communication Networks*, AT&T Bell Labs.
- 1991 : *Parallel Simulation of Continuous Time Markov Chains Using Uniformization*, McGill University; Duke University.
- 1990 : *Performance Analysis of Parallelized Discrete-Event Simulation*, AT&T Bell Labs; IBM TJ Watson Research Center.
- 1989 : *Parallelized Estimation of Network Reliability*, Carnegie-Mellon University.
- 1989 : *The Cost of Conservative Synchronization in Parallel Discrete-Event Simulations*, Stanford University; University of California, Berkeley.
- 1988 : *The Optimal Mapping of Pipelined Computations onto Linear Arrays*, General Electric Research and Development Center.
- 1987 : *Static Mapping of Irregular Problems*, Yale University.
- 1987 : *Optimal Dynamic Remapping Policies*, IBM TJ Watson Research Center.

Professional Activities

EDITORIAL ACTIVITIES

Associate Editor, *Performance Evaluation*, 2005-present.

Editor-in-Chief, *ACM Transactions on Computer Modeling and Simulation*, 1997-2003.

Area Editor, *ACM Transactions on Computer Modeling and Simulation*, 1996-1997.

Associate Editor, *ACM Transactions on Computer Modeling and Simulation*, 1990-1996.

Associate Editor, *ORSA Journal on Computing*, 1990-1997.

ADVISORY ACTIVITIES

Steering Committee, Workshop on Principles of Advanced and Distributed Simulation, 2005-present.

Science Council, Center of Excellence in Space Data and Information Science, 1995-1999, Chair 1998-1999.

CMG Computer Science Advisory Committee, 1994-1995, Chair 1995.

Executive Committee, Virginia/ICASE/Langley Program in High Performance Computing and Communication, 1995-1996.

Steering Committee, Workshop on Parallel and Distributed Simulation, 1992-1994.

CONFERENCE ORGANIZATION

General Chair, Winter Simulation Conference 2006.

General Chair, Workshop on Principles of Advanced and Distributed Simulation, 2005.

Program Chair, 2001 MASCOTS conference.

Program Chair, 1996 ACM Sigmetrics Conference.

Tools Chair, 1995 Petri Net and Performance Modeling Conference.

Tutorial Chair, 1994 ACM Sigmetrics Conference.

Publicity/Exhibits Chair, 1992 ORSA Conference on the Interface of Operations Research and Computer Science.

General Chair, 1990 Workshop on Parallel and Distributed Simulation.

Program Chair, 1989 Workshop on Parallel and Distributed

Program Committee, PADS (1992-2002), Winter Simulation Conference (1989, 1991), ACM Sigmetrics (1991-1993, 1998-1999, 2002), MASCOTS (2002), Communication Networks and Distributed Systems Modeling Conference (2002), International Performance, Computing and Communications Conference (2002). There are surely others. I've lost count.

PROFESSIONAL MEMBERSHIPS

IEEE, Fellow.

ACM

IFIPS Working Group 7.3 (for performance evaluation).