

VIVEK SARIN

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Department of Computer Science
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January 1, 2006

EDUCATION

Ph. D., Computer Science, University of Illinois at Urbana-Champaign, 1997

M. S., Computer Science, University of Minnesota, 1993

B. Tech., Computer Science & Engineering, Indian Institute of Technology, Delhi, 1990

RESEARCH INTERESTS

Computational Science and Engineering: numerical algorithms for scientific and engineering problems such as protein structure modeling, parasitic extraction of VLSI circuits, coastal modeling, particulate flow simulation, heat transfer in porous media, brain microstructure reconstruction, etc.

Parallel and distributed computing: high performance numerical algorithms and software

Large-scale data handling and analysis: algorithms for data mining, analysis of protein-nucleic acid interactions, mapping of brain microstructures, traffic flow modeling, etc.

PROFESSIONAL EXPERIENCE

Associate Professor, Department of Computer Science, Texas A&M University, Sept. 2005–present

Assistant Professor, Department of Computer Science, Texas A&M University, Aug. 1999–Aug. 2005

Research Associate, Department of Computer Science, Purdue University, Jan. 1997–July 1999

AWARDS AND HONORS

NSF Faculty Early Career Development (CAREER) Award, 2000–2004

IBM Faculty Partnership Award, 2002

Texas Engineering Experiment Station (TEES) Select Young Faculty, 2002

Texas Engineering Experiment Station (TEES) Special Research Fellow, 2001

PUBLICATIONS

(With some exceptions, authors are listed in decreasing order of contribution; Sarin's students are marked with *)

Books

1. "High Performance Algorithms for Structured Matrix Problems," a volume in the series *Advances in the Theory of Computation and Computational Mathematics*, edited by P. Arbenz, M. Paprzycki, A. H. Sameh, and V. Sarin, Nova Science Publishers, Commack, NY, 1998.

Journal Articles

2. Yan*, S., Sarin, V., and Shi, W., "Fast 3D capacitance extraction by inexact factorization and reduction," *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, accepted for publication.
3. Saldana*, J. G. B., Anand, N. K., and Sarin V., "Numerical simulation of mixed convective flow over a three-dimensional horizontal backward-facing step," *Journal of Heat Transfer*, Vol. 127, pp. 1027-1036, 2005.
4. Yan*, S., Sarin, V., and Shi, W., "Sparse transformations and preconditioners for hierarchical 3D capacitance extraction," *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, Vol. 24, No. 9, pp. 1420-1426, 2005.
5. Saldana*, J. G. B., Anand, N. K., and Sarin V., "Forced convection over a three-dimensional horizontal backward facing step," *International Journal of Computational Methods in Engineering Science and Mechanics*, Vol. 6, pp. 225-234, 2005.
6. Mahawar*, H. and Sarin, V., "Parallel iterative methods for dense linear systems in inductance extraction," *Parallel Computing*, Vol. 29, pp. 1219-1235, 2003.
7. Sambavaram*, S. R., Sarin, V., Grama, A., and Sameh, A. H., "Multipole-based preconditioners for large sparse linear systems," *Parallel Computing*, Vol. 29, pp. 1261-1273, 2003.
8. Sarin, V. and Sameh, A. H., "Hierarchical divergence-free bases and their application to particulate flows," *Journal of Applied Mechanics*, Vol. 70, pp. 44-49, 2003.
9. Sameh, A. H. and Sarin, V., "Parallel algorithms for indefinite linear systems," *Parallel Computing*, Vol. 28, pp. 285-299, 2002.
10. Pan, T.-W., Joseph, D. D., Bai, R., Glowinski, R., and Sarin, V., "Fluidization of 1204 spheres: simulation and experiment," *Journal of Fluid Mechanics*, Vol. 451, pp. 169-191, 2002.
11. Yang, D.-Y., Grama, A., Sarin, V., and Ramakrishnan, N., "Compression of particle data from hierarchical approximate methods," *ACM Transactions on Mathematical Software*, Vol. 27, No. 3, 2001.
12. Golub, G. H., Sameh, A. H., and Sarin, V., "A parallel balance scheme for banded linear systems," *Numerical Linear Algebra with Applications*, Vol. 8, No. 5, pp. 297-316, 2001.
13. Grama, A., Sarin, V., and Sameh, A. H., "Improving error bounds for multipole-based treecodes," *SIAM Journal on Scientific Computing*, Vol. 21, No. 5, pp. 1790-1803, 2000.
14. Sameh, A. H. and Sarin, V., "Hybrid parallel linear system solvers," *International Journal for Computational Fluid Dynamics*, Vol. 12, pp. 213-223, 1999.

15. Sarin, V. and Sameh, A. H., "An efficient iterative method for the generalized Stokes problem," *SIAM Journal on Scientific Computing*, Vol. 19, No. 1, pp. 206-226, 1998.
16. Gupta, R., Sarin, V., and Raghavan, V., "Computer simulation of martensitic microstructures," *Scripta Metallurgica et Materialia*, Vol. 24, No. 3, 1990.

Refereed Conference Articles

17. Mahawar*, H. and Sarin, V., "Parallel software for inductance extraction of VLSI circuits," *Proceedings of the International Parallel and Distributed Processing Symposium (IPDPS)* (to appear), Rhodes Island, Greece, Apr. 2006. **(Acceptance rate: 24%)**
18. Srinivasan*, K., Mahawar*, H., and Sarin, V., "A multipole based treecode using spherical harmonics for potentials of the form $r^{-\lambda}$," *Proceedings of the International Conference on Computational Science*, Lecture Notes in Computer Science, Springer-Verlag, Vol. 3514, pp. 107-114, Atlanta, GA, May 2005. **(Acceptance rate: 29%)**
19. Mahawar*, H., Sarin, V., and Grama, A., "Parallel performance of hierarchical multipole algorithms for inductance extraction," *Proceedings of the International Conference on High Performance Computing (HiPC)*, Lecture Notes in Computer Science, Springer-Verlag, Vol. 3296, pp. 450-461, Bangalore, India, Dec. 2004. **(Acceptance rate: 22%)**
20. Yan*, S., Sarin, V., and Shi, W., "Fast capacitance extraction using inexact factorization," *Proceedings of the 13th Topical Meeting on Electrical Performance of Electronic Packaging (EPEP)*, pp. 285-288, Portland, OR, Oct. 2004.
21. Mahawar*, H. and Sarin, V., "Parallel software for inductance extraction," *Proceedings of the International Conference on Parallel Processing (ICPP)*, pp. 380-386, Quebec, Canada, Aug. 2004. **(Acceptance rate: 34%)**
22. Saldana*, J. G. B., Anand, N. K., and Sarin V., "Numerical simulation of mixed convective flow over a three-dimensional horizontal backward-facing step," *Proceedings of the ASME Heat Transfer/Fluids Engineering Summer Conference*, pp. 1-12, Charlotte, NC, July 2004. Proceedings on CD.
23. Grama, A. and Sarin, V., "Impact of far-field interactions on performance of multipole-based preconditioners for sparse linear systems," *Proceedings of the ACM International Conference on Supercomputing (ICS)*, pp. 41-47, Saint-Malo, France, June 2004. **(Acceptance rate: 22%)**
24. Yan*, S., Sarin, V., and Shi, W., "Sparse transformations and preconditioners for hierarchical 3D capacitance extraction with multiple dielectrics," *Proceedings of the 41st Design Automation Conference (DAC)*, pp. 788-793, San Diego, CA, June 2004. **(Acceptance rate: 20%)**
25. Mahawar*, H., Sarin, V., and Shi, W., "A solenoidal basis method for efficient inductance extraction," *Proceedings of the 39th Design Automation Conference (DAC)*, pp. 751-756, New Orleans, LA, June 2002. **(Acceptance rate: 31%)**
26. Mahawar*, H., Sarin, V., and Shi, W., "Fast inductance extraction of large VLSI circuits," *Proceedings of the International Parallel and Distributed Processing Symposium (IPDPS)*, pp. 415-421, Fort Lauderdale, FL, Apr. 2002. **(Acceptance rate: 38%)**
27. Sambavaram*, S. R. and Sarin, V., "A high performance algorithm for incompressible flows using local solenoidal functions," *Proceedings of the International Parallel and Distributed Processing Symposium (IPDPS)*, pp. 422-427, Fort Lauderdale, FL, Apr. 2002. **(Acceptance rate: 38%)**

28. Sambavaram*, S. R. and Sarin, V., "A parallel solenoidal basis method for incompressible fluid flow problems," *Parallel Computational Fluid Dynamics '01 (ParCFD)*, P. Wilders ed., North-Holland, pp. 309-314, 2002.
29. Pan, T.-W., Sarin, V., Glowinski, R., Periaux, J., and Sameh, A. H., "Parallel solution of multibody store separation by a fictitious domain method," *Parallel Computational Fluid Dynamics '99 (ParCFD)*, D. Keyes ed., North-Holland, pp. 329-336, 2000.
30. Knepley, M. G., Sarin, V., and Sameh, A. H., "Design of large scale parallel simulations," *Parallel Computational Fluid Dynamics '99 (ParCFD)*, D. Keyes ed., North-Holland, pp. 273-280, 2000.
31. Yang, D. Y., Grama, A., and Sarin, V., "Bounded-error compression of particle data from hierarchical approximate methods," *Proceedings of Supercomputing '99*, Article No. 71, pp. 1-13, Portland, OR, Nov. 1999. Proceedings on CD. (**Acceptance rate: 24%**)
32. Sarin, V. and Sameh, A. H., "Large scale simulation of particulate flows," *Proceedings of the International Parallel and Distributed Processing Symposium (IPDPS)*, San Juan, Puerto Rico, pp. 660-666, Apr. 1999. (**Acceptance rate: 43%**)
33. Pan, T.-W., Sarin, V., Glowinski, R., Sameh, A. H., and Periaux, J., "A fictitious domain method with distributed Lagrange multipliers for the numerical simulation of particulate flow and its parallel implementation," *Parallel Computational Fluid Dynamics '98 (ParCFD)*, C. A. Lin, ed., North-Holland, pp. 467-474, 1999.
34. Grama, A., Sarin, V., and Sameh, A. H., "Improving error bounds of multipole-based treecodes," *Proceedings of the International Conference on High Performance Computing (HiPC)*, pages 73-80, Chennai, India, Dec. 1998. (**Acceptance rate: 18%**)
35. Grama, A., Sarin, V., and Sameh, A. H., "Analyzing the error bounds of multipole-based treecodes," *Proceedings of Supercomputing '98*, pp. 1-12, Orlando, FL, Nov. 1998. (**Acceptance rate: 20%**)
36. Knepley, M. G. and Sarin, V., "Algorithm development for large scale computing: A case study," *Proceedings of the SIAM Workshop on Object Oriented Methods for Inter-operable Scientific and Engineering Computing*, pp. 138-147, IBM T. J. Watson Research Center, Yorktown Heights, NY, Oct. 1998.
37. Knepley, M. G., Sarin, V., and Sameh, A. H., "Parallel simulation of particulate flows," *Proceedings of the International Symposium on Solving Irregularly Structured Problems in Parallel: IRREGULAR '98*, Lecture Notes in Computer Science, Springer-Verlag, Vol. 1457, pp. 226-237, Aug. 1998.
38. Ostromsky, Tz., Sarin, V., and Sameh, A. H., "A parallel sparse linear system preconditioner: The balance scheme," *Proceedings of the International Conference on Information Systems, Analysis and Synthesis*, pp. 367-372, Orlando, FL, July 1998.
39. Sarin, V. and Sameh, A. H., "Parallel preconditioners for elliptic partial differential equations," *Proceedings of Supercomputing '96*, Article No. 30, pp. 1-12, Pittsburgh, PA, Nov. 1996. Proceedings on CD. (**Acceptance rate: 31%**)
40. Sarin, V. and Kapoor, S., "Algorithms for relative neighborhood graphs and voronoi diagrams in simple polygons," *Proceedings of the Canadian Conference on Computational Geometry*, Toronto, Canada, Aug. 1992.

Journal Articles (Submitted)

41. Mahawar*, H. and Sarin, V., "Preconditioned iterative solvers for inductance extraction of VLSI circuits," *SIAM Journal on Scientific Computing*, submitted after revision.

Conference Publications, Posters, and Abstracts

42. Mahawar*, H. and Sarin, V., "Parallel preconditioned iterative solvers for inductance extraction," *Copper Mountain Conference on Iterative Methods*, Copper Mountain, CO, Mar. 2004.
43. Sarin, V., "Preconditioning techniques for dense linear systems," *Copper Mountain Conference on Iterative Methods*, Copper Mountain, CO, Mar. 2004.
44. Wang*, X. and Sarin, V., "Preconditioned solenoidal basis method for saddle-point problems," *Copper Mountain Conference on Iterative Methods*, Copper Mountain, CO, Mar. 2004.
45. Mahawar*, H. and Sarin, V., "Parallel preconditioned iterative solvers for inductance extraction," *SIAM Conference on Parallel Processing for Scientific Computing*, San Francisco, CA, Feb. 2004.
46. Mahawar*, H. and Sarin, V., "A parallel high performance inductance extraction algorithm," (Poster), *Supercomputing '03*, Phoenix, AZ, Nov. 2003. (**Acceptance rate: 35%**)
47. Wang*, X. and Sarin, V., "Preconditioned solenoidal basis method for incompressible fluid flows," *International Conference On Preconditioning Techniques For Large Sparse Matrix Problems In Scientific and Industrial Applications*, Napa, CA, Oct. 2003.
48. Gupta*, R. and Sarin, V., "Preconditioning with support graphs," *International Conference On Preconditioning Techniques For Large Sparse Matrix Problems In Scientific and Industrial Applications*, Napa, CA, Oct. 2003.
49. Sarin, V., "Sparse preconditioners for dense linear systems," *International Conference On Preconditioning Techniques For Large Sparse Matrix Problems In Scientific and Industrial Applications*, Napa, CA, Oct. 2003.
50. Mahawar*, H. and Sarin, V., "Novel algorithms for inductance extraction," *SIAM Conference on Computational Science and Engineering*, San Diego, CA, Feb. 2003.
51. Grama, A., Sambavaram*, S. R., Sarin, V., and Sameh, A. H., "Multipole-based preconditioners for large sparse linear systems," *International Workshop on Parallel Matrix Algorithms and Applications*, Neuchatel, Switzerland, Nov. 2002.
52. Mahawar*, H. and Sarin, V., "Parallel iterative methods for dense linear systems," *International Workshop on Parallel Matrix Algorithms and Applications*, Neuchatel, Switzerland, Nov. 2002.
53. Mahawar*, H. and Sarin, V., "A preconditioned solenoidal basis method for inductance extraction of VLSI circuits," *Copper Mountain Conference on Iterative Methods*, Copper Mountain, CO, Mar. 2002.
54. Sambavaram*, S. R. and Sarin, V., "Preconditioned iterative solvers for the generalized Stokes problem," *Copper Mountain Conference on Iterative Methods*, Copper Mountain, CO, Mar. 2002.
55. Sarin, V., "Preconditioned iterative solvers based on discrete solenoidal spaces with application to inductance extraction," *Latsis Symposium on Iterative Solvers for Large Linear Systems*, Zurich, Switzerland, Feb. 2002.
56. Sarin, V. and Sambavaram*, S. R., "Preconditioned solenoidal basis methods for incompressible fluid flow," *International Conference On Preconditioning Techniques For Large Sparse Matrix Problems In Industrial Applications*, Tahoe City, CA, Apr. 2001.

57. Sarin, V., "Parallel linear solvers for incompressible fluid problems," *SIAM Conference on Parallel Processing for Scientific Computing*, Portsmouth, VA, Mar. 2001.
58. Golub, G. H., Sameh, A. H., and Sarin, V., "A parallel balance scheme for banded linear systems," *Midwest Numerical Analysis Day*, Indianapolis, IN, Mar. 2000.
59. Knepley, M. G., Sarin, V., and Sameh, A. H., "Multilevel preconditioning for parallel CFD," *International Conference On Preconditioning Techniques For Large Sparse Matrix Problems In Industrial Applications*, Minneapolis, MN, June 1999.
60. Sarin, V., "Optimal parallel preconditioners for 3D particulate flows," *SIAM Conference on Parallel Processing for Scientific Computing*, pp. 1-9, San Antonio, TX, Mar. 1999. Proceedings on CD.
61. Sameh, A. H. and Sarin, V., "Hybrid parallel linear system solvers," *Japan-US Symposium on Finite Element Methods in Large Scale Computational Fluid Dynamics*, Chiba, Japan, pp. 141-146, April 1998.
62. Grama, A., Sarin, V., and Sameh, A. H., "Piecewise multipoles for dense iterative solvers," *Copper Mountain Conference on Iterative Methods*, Copper Mountain, CO, Mar. 1998.
63. Sarin, V. and Sameh, A. H., "Multilevel algorithms for elliptic problems," *Copper Mountain Conference on Iterative Methods*, Copper Mountain, CO, Mar. 1998.
64. Grama, A., Sarin, V., and Sameh, A. H., "Parallel solution of dense linear systems in computational electromagnetics," *Minisymposium on Some Recent Developments in Matrix Methods in Computational Electromagnetics*, *SIAM Annual Meeting*, Toronto, Canada, July 1998.
65. Grama, A., Sarin, V., and Sameh, A. H., "Parallel solution methods using dense hierarchical approximations," *International Conference on Computational Engineering Science*, Atlanta, GA, Oct. 1998.
66. Sarin, V. and Sameh, A. H., "A projection based iterative algorithm for sparse linear systems," *IMACS International Symposium on Iterative Methods in Scientific Computation*, Jackson Hole, WY, July 1997.
67. Golub, G. H., Sameh, A. H., and Sarin, V., "A parallel balanced method for sparse linear systems," *Conference on Preconditioned Iterative Methods for Large Scale Problems in Scientific Computations: PRISM '97*, Nijmegen, The Netherlands, May 1997.
68. Sarin, V. and Sameh, A. H., "An efficient iterative method for the generalized Stokes problem," *Copper Mountain Conference on Iterative Methods*, Copper Mountain, CO, Apr. 1996.
69. Sarin, V. and Sameh, A. H., "An iterative method for the generalized Stokes problem," *SIAM Annual Meeting*, Charlotte, NC, Oct. 1995.
70. Sameh, A. H. and Sarin, V., "Parallel algorithms for the generalized Stokes problem," *Computational Mechanics '95 - International Conference on Computational Engineering Science*, pp. 464-469, S. Atluri, G. Yagawa, and T. Cruse, eds., Springer, 1995.
71. Sarin, V. and Saied, F., "The spectral Lanczos method applied to the time-independent Schrodinger equation," *SIAM Conference on Applied Linear Algebra*, Snowbird, UT, pp. 331-335, June 1994.

INVITED PRESENTATIONS

1. “Finite element matrix approximations and graph-based parallel preconditioners,” Minisymposium on Support Preconditioners, *SIAM Conference on Parallel Processing for Scientific Computing*, San Francisco, CA, Feb. 2006.
2. “Preconditioned iterative methods for saddle-point problems,” Plenary talk at the *International Conference On Preconditioning Techniques For Large Sparse Matrix Problems In Scientific and Industrial Applications*, Atlanta, GA, May 2005.
3. “Preconditioning with support graphs,” Minisymposium on Support Theory for Preconditioning, *SIAM Conference on Computational Science and Engineering*, Orlando, FL, Feb. 2005.
4. “Iterative solution methods for saddle point problems,” Minisymposium on Solution of Symmetric and Nonsymmetric Indefinite Linear Systems, *SIAM Conference on Applied Linear Algebra*, Williamsburg, VA, July 2003.
5. “Preconditioned iterative methods for parasitic extraction,” Computing Research Institute Seminar, Purdue University, May 2003.
6. “Efficient algorithms for inductance and capacitance extraction,” Computational Science and Engineering Seminar, University of Illinois at Urbana-Champaign, May 2003.
7. “New techniques for fast 3D inductance and capacitance extraction,” IBM Austin Research Laboratory, Austin, TX, Aug. 2001.
8. “Efficient parallel algorithms for computational fluid dynamics,” Argonne National Laboratory, Michigan State University, Texas A&M University, University of New Mexico, University of Notre Dame, 1998-1999.
9. “Parallel simulation of particulate flows,” National Center for Supercomputing Applications, University of Illinois at Urbana-Champaign, Sept. 1998.
10. “Multilevel algorithms for elliptic problems,” Scientific Computing and Computational Mathematics Seminar, Stanford University, Jan. 1998.
11. “Efficient iterative methods for saddle point problems,” IBM T. J. Watson Research Center, Yorktown Heights, NY, Feb. 1997.
12. “Efficient iterative methods for saddle point problems,” Computational Science and Engineering Seminar Series, Purdue University, Feb. 1997.

RESEARCH FUNDING

Research Grants

1. “Preconditioning techniques for linear systems of equations,” National Science Foundation, PI: V. Sarin, \$250,000, 9/04-8/07.
2. “ITR: Coastal modeling and management,” National Science Foundation, PI: P. Lynett, Co-PIs: T-J. Hsu, P. L. Liu, B. Raubenheimer, and V. Sarin, \$1,000,000, 9/04-8/08.
3. “ITR/AP: Modeling and simulation of sub-micron VLSI,” National Science Foundation, PI: V. Sarin, Co-PI: W. Shi, \$426,954, 9/01-8/05.
4. “CAREER: Robust preconditioners for sparse linear systems,” National Science Foundation, PI: V. Sarin, \$245,000, 4/00-3/05.

5. "Parallel algorithms and software for delay estimation in VLSI circuits," Texas Advanced Technology Program, PI: V. Sarin, Co-PI: W. Shi, \$149,993, 1/02-8/04.
6. "Preconditioned iterative methods for sparse linear systems," IBM Faculty Partnership Award, PI: V. Sarin, \$20,000, 11/02-10/03.
7. "Innovative algorithms and techniques for large scale simulations," National Science Foundation, PI: A. H. Sameh, Co-PIs: A. Grama and V. Sarin, \$308,521, 9/99-8/03.
8. "KDI: Direct numerical simulation of solid-liquid flows," National Science Foundation, PI: D. D. Joseph, Co-PIs: H. H. Hu, R. Glowinski, Y. Saad, A. H. Sameh, Co-Investigators: T.-W. Pan, V. Sarin, and P. Singh, \$2,270,000, 9/98-8/02.
9. "Performance evaluation and optimization of scientific kernels," Silicon Graphics, Inc., PI: A. H. Sameh, Co-PIs: A. Grama and V. Sarin, \$25,000, 9/98-8/99.

Infrastructure Grants

10. "MRI: Development of a high density, high performance Beowulf cluster," National Science Foundation, PI: W. Rundell, Co-PIs: R. J. Carroll, M. B. Hall, B. P. Mohanty, R. C. Webb, Co-Investigators: V. Sarin and 12 others, \$405,202, 8/02-7/07.
11. "MRI: Development of brain tissue scanner," National Science Foundation, PI: B. H. McCormick, Co-PIs: N. M. Amato, L. Rauchwerger, Co-Investigator: V. Sarin, \$105,000, 9/00-8/01.
12. "Development of brain tissue scanner," PUF Equipment Funds, Texas Engineering Experiment Station, PI: B. H. McCormick, Co-PIs: N. M. Amato, J. Keyser, L. Rauchwerger, and V. Sarin, \$108,000, 11/00-8/01.
13. "MRI: Acquisition of a computational environment for scientific computing," National Science Foundation, PI: A. H. Sameh, Co-PIs: Z. Li, A. Grama, E. Sacks, C. Hoffman, Co-Investigators: E. Houstis, J. Korb, J. Peters, J. Rice, and V. Sarin, \$700,000, 9/98-8/01.

Computational Resources Grants

14. "Parallel and distributed numerical algorithms," National Computational Science Alliance, PI: V. Sarin, 5,000 Service units, 2001, 2003, and 2005. (Resource for CPSC659 course projects.)

PROFESSIONAL SERVICE

1. NSF Panelist: June 2005, June 2004, Feb. 2003, Dec. 2002, Apr. 2001
2. Program Committee Member
 - International Conference on Parallel Processing (ICPP), 2004
 - Supercomputing Conference (SC2003), Poster Committee, 2003
 - International Conference on High Performance Computing (HiPC), 2002
 - International Conference on Parallel Processing (ICPP), 2000
3. Session Chair
 - International Conference on Parallel Processing (ICPP), 2004
 - SIAM Computational Science and Engineering Conference, 2003

4. Reviewer

Journals: Concurrency: Practice and Experience, Electronic Transactions in Numerical Analysis, IEEE Computing in Science and Engineering, IEEE Computer (Special issue on Data Mining and Analysis), IEEE Transactions on Data Mining, Information Processing Letters, International Journal of High Performance Computing Applications, Journal of Parallel and Distributed Computing, Parallel and Distributed Computing Practices, Parallel Computing, SIAM Journal on Matrix Analysis and Applications, SIAM Journal on Numerical Analysis.

Conferences: High Performance Computer Architecture (HPCA), '02; International Conference on High Performance Computing (HiPC), '95, '98, '02; International Conference on Parallel Processing (ICPP), '97; International Conference on Supercomputing (ICS), '01, '04; International Parallel and Distributed Processing Symposium (IPDPS), '00; International Parallel Processing Symposium (IPPS), '97, '99; Supercomputing, '01; VECPAR, High Performance Computing for Computational Science, '02.

Funding Agencies: National Science Foundation, '04, '05; Israel Science Foundation, '04; U.S. Civilian Research and Development Foundation, '03.

5. Member of ACM, IEEE, and SIAM.

UNIVERSITY SERVICE

1. University Committees

- Computational Sciences Certificate Program, Computer Science Coordinator; '01-'06

2. Departmental Committees

- ABET Preparation Committee, Member; '02-'03
- Advisory Committee, Elected Member; '00-'01, '01-'02, '02-'03, and '05-'06
- Colloquium Committee, Member; '00-'01 and '02-'03
- Faculty and Staff Awards Committee, Member; '01-'02 and '02-'03
- Faculty Search Committee, Member; '01-'02
- Graduate Admissions and Awards Committee, Member; '99-'00 and '00-'01
- Graduate Admissions and New Student Assistantships Committee, Member; '04-'06.
- Information Technology Development Advisory Committee, Member; '99-'00
- Library Committee, Member; '99-'00 and '03-'04
- Web Advisory Committee; '04-'05 and '05-'06 (chair)

TEACHING EXPERIENCE

1. Graduate Courses

- CPSC 653: Computer methods in applied sciences; Fall '00, Fall '03, Fall '05
- CPSC 659: Parallel and distributed numerical algorithms; Fall '99, Spring '01, Spring '03, Spring '05
- CPSC 660: Computational linear algebra; Spring '00, Spring '02, Spring '04
- CPSC 689: Data mining; Spring '01 (Co-developed new course with T. Ioerger)
- CPSC 689: Iterative methods for linear systems; Fall '02 (Developed new course)
- CPSC 689: Advanced topics in iterative methods; Fall '04 (Developed new course)

2. Undergraduate Courses

- CPSC 311: Analysis of algorithms; Fall '01

- CPSC 442: Scientific programming; Spring '03
- ENGR 111 (Honors): Introduction to electrical and computer engineering; Fall '03, Fall '04, Fall '05 (Co-developed new course with A. N. Reddy and D. M. Walker)

STUDENT SUPERVISION

Current Ph. D. students: Thomas George, Kasthuri S. Kannan, Hemant Mahawar, Daniel Nevin, Meiqiu Wang

Former Ph. D. students: Juan G. B. Saldana (co-advisor with N. K. Anand, Mech. Engg.; National Polytechnic Institute, Mexico), Shu Yan (co-advisor with Weiping Shi, Elec. Engg.; FreeScale Semiconductor, Inc., formerly part of Motorola)

Former M. S. students: Radhika Gupta, Sreekanth Juttu (Xilinx, Inc.), Hemant Mahawar (PhD student), Sreekanth R. Sambavaram (Insomniac Games), Xue Wang

Former undergraduate research assistants (supported): Gerardo J. Churion, Hypte Correa, Loderick Goza, Mary J. Snyder (Purdue, REU, Summer 2004), Jason Zylks

PERSONAL

Married to Vandana Sarin, father of Parth and Medha

Permanent resident of the USA

Indian citizen