

CURRICULUM VITAE
of
DILIP SARKAR

1. Date: October 2001

PERSONAL

2. Name: Dilip Sarkar
3. Home Phone: (305)-669-1968
4. Office Phone: (305)-2842256
5. Home Address: 9900 SW 73 Ave., Miami, FL 33156
6. Current Academic Rank: Associate Professor
7. Primary Department: Computer Science
8. Citizenship: Indian
9. Visa Type (if non-citizen): Permanent Resident of USA

EXPERIENCE

10. Academic:

- | | |
|-----------------|--------------------------------------------------------------------------------------|
| June 94 - | Associate Professor of Computer Science: University of Miami, Coral Gables, Florida. |
| Jan 88 - May 94 | Assistant Professor of Computer Science, University of Miami, Coral Gables, Florida. |
| Aug 86 - Dec 87 | Teaching / Research Assistant: University of Central Florida, Orlando, Florida. |
| Jan 85 - Aug 86 | Teaching / Research Assistant, Washington State University: Pullman, Washington. |

11. Non-Academic:

- | | |
|-----------------|----------------------------------------------------------------------------|
| May - June 1982 | Summer Industrial Trainee, Bhabha Atomic Research Center, Calcutta, India. |
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12. Military: None

HIGHER EDUCATION

13. Institutional:

- | | |
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| Aug 86 - May 88 | Ph.D. (Computer Science): University of Central Florida, Orlando, Florida. |
| Jan 85 | Ph.D. student (Computer Science): Washington State University, Pullman, Washington. |
| Aug 88 | (Transferred to University of Central Florida with thesis advisor Dr. Narsingh Dco.) |
| July 83 - Dec 84 | M.S. (Computer Science), Indian Institute of Science, Bangalore, India. |
| July 78 | B. Technology with Honors (Electronics and Electrical Communication Engineering), |
| May 83 | Indian Institute of Technology, Kharagpur, India. |

14. Non-Institutional: NONE

PUBLICATIONS

15. Refereed journal articles :

1. S. H. Wong, D. Sarkar, and S. L. Swartz, "CORBA-based Middleware Architecture for Building Open and Interoperable GISs," to appear in *IEEE Multimedia*.
2. D. Fedyanin and D. Sarkar, "Iterative algorithms for performance evaluation of wireless networks with guard channels," to appear in *International Journal of Wireless Information Networks*.

3. D. Sarkar, "An Algorithm for Computation of Inter-Pattern Interference Noise in BAM," to appear in *Neural Network World*.
4. J. Escorcia, D. Ghosal, and D. Sarkar, "A Novel Cache Distribution Heuristic Algorithm for a Mesh of Caches and Its Performance Evaluation:" to appear in *Computer Communications*.
5. D. Sarkar, "Empirical Estimation of Generalization Ability of Neural Networks," *Neural Network World*, Vol. 11, No. 1, pp. 3 - 15, 2001.
6. S. Banerjee and D. Sarkar, "Hypercube Connected Rings: A Fault-Tolerant and Scalable Architecture for Virtual Lightwave Network Topology," *Computer Communications*, Vol 24, No. 11, pp. 1060-1079, 2001.
7. D. Sarkar and W. Tong, "Product Networks: A family of symmetric interconnection networks from a group model," *International Journal of Computer Mathematics*, Vol 73, pp. 183 - 200: 1999.
8. D. Sarkar, "Randomness in Generalization Ability: A Source to Improve It," *IEEE Transactions on Neural Networks*, Vol. 7, pp. 676-685, 1996.
9. D. Sarkar, "Methods to Speedup Error Back Propagation Learning Algorithm," *Computing Surveys*, Vol 27, No. 4, 1995.
10. S. Banerjee, B. Mukherjee, and D. Sarkar, "Heuristic Algorithms for Constructing Near-Optimal Structures of Linear Multihop Lightwave Networks," *IEEE Transactions on Communications*, Vol 42, pp. 1811-1826, 1994.
11. V. Pestien, S. Ramakrishnan, and D. Sarkar, "Packet Transmission in a Noisy-Channel Ring Network," *SIAM Journal on Computing*: Vol. 23, pp. 553-562, 1994.
12. H. Dhif and D. Sarkar, "Fuzzy Arithmetic on Systolic Arrays," *Parallel Computing*, Vol. 19, pp. 1283-1301, 1993
13. D. Sarkar. "Cost and Time-Cost Effectiveness of Multiprocessing," *IEEE Transactions on Parallel and Distributed Systems*, Vol. 4, pp. 704712, 1993.
14. B. Applegate, T. Fernandez, and D. Sarkar, "Analogical Problem Solving in an Expert System," *IEEE Transactions on Systems, Man, and Cybernetics*, Vol. 22, pp. 1138-1144, 1992.
15. V. E. Mendia and D. Sarkar, "Optimal Broadcasting on the Star Graph," *IEEE Transactions on Parallel and Distributed Systems*, Vol. 3, pp. 389-396, 1992.
16. D. Sarkar and A. Mukherjee, "Design of Optimal Systolic Algorithms for the Transitive Closure Problem:" *IEEE Transactions on Computer.*, Vol. 41, pp. 508-812, 1992.
17. V. Aggarwal, N. Dco, and D. Sarkar, "The Knapsack Problem with Disjoint Multiple-Choice Constraints," *Naval Research Logistic*, Vol. 39, pp. 213-227, 1992.
18. H. Dhif and D. Sarkar, "Systolic Algorithms for the Dynamic Programming Problem: *International Journal of Computer Mathematics*, Vol. 41, pp. 151-163, 1992.
19. D. Sarkar and I. Stojmcnovic, "Parallel Algorithm for Separation of Two Sets of Points and Recognition of Digital Convex Polygons," *International Journal of Parallel Programming*, Vol. 21, pp. 109-121, 1992.
20. S. K. Das, D. Sarkar, V. K. Agrawal, and L. M. Patnaik: "Extended Colored Petri Nets: An Efficient Tool for Analyzing Concurrent Systems," *Information Sciences*: Vol. 54, pp. 191-218, 1991
21. N. Dco and D. Sarkar, "Parallel Algorithms for Merging and Sorting," *Information Sciences*, Vol. 56, pp. 151-161, 1991.
22. D. Sarkar, S. K. Das, V. K. Agrawal, and L. M. Patnaik, "A New Methodology for Analyzing Distributed Systems Modeled by Petri Nets," *International Journal of Computer Mathematics*, Vol. 31, pp. 153-165, 1990.
23. D. Sarkar and R. Guha, "Mapping a Class of Algorithms from Binary-Tree Machines to Linear Arrays," *Computer Systems: Science and Engineering*, Vol. 5, pp. 202-204, 1990.

24. D. Sarkar and N. Dco, "Estimating the Speedup in Parallel Parsing," *IEEE Transactions on Software Engineering*, Vol. 16, pp. 677-683, 1990.
25. W. Tong and D. Sarkar, "The Gg-network: A New Linear-Cost Computer Network," *Congressus Numerantium*, Vol. 74, pp. 76-94, 1990.
26. D. Sarkar and I. Stojmcnovic, "An Optimal Parallel Circle-Cover Algorithm," *Information Processing Letters*, Vol. 32, pp. 3-6, 1989.
27. N. Dco and D. Sarkar, "On Certain Planar Coverings of Complete Graphs," *Congressus Numerantium*, Vol. 66, pp. 33-44, 1988.
28. D. Sarkar and R. Guha, "A Fast Deadlock-Detection Algorithm for Hypercube," *International Journal of Computer Mathematics*, Vol. 25, pp. 69-82, 1988.
29. S. K. Das, V. K. Agrawal, D. Sarkar, L. M. Patnaik, "Invariant-Prscrving Petri Net Reduction and Conditions for Invariant-Existence," *Computers & Electrical Engineering*, Vol. 14, pp. 75-91, 1988.
30. S. K. Das, V. K. Agrawal, D. Sarkar, L. M. Pstnaik, and P. S. Goel, "Reflexive Incidence Matrix (RIM) Rcpresentation of Petri Nets," *IEEE Transactions on Software Engineering*, Vol. SE-13, No. 6, pp. 643-653: 1987.
31. D. Sarkar, "Lcssa - An Array to Solve a Set of Linear Equations," *International Journal of Computer Mathematics*, Vol. 21, No. 3-4, pp. 297 -310, 1987.

16. Papers in refereed conference proceedings :

1. U. K. Sarkar, S. Ramakrishnan, and D. Sarkar, " Modeling Full-Length Video Using Markov-Modulated Gamma-Based Framework:" to appear in *Proceedings of the GLOBECOM*, 2001.
2. U.K. Sarkar, S. Ramakrishnan, and D. Sarkar, "Segmenting Full-Length VBR Video into Shots for Modeling with Markov-Modulated Gamma-Based Framework," *Proceeding.? of the ITCorn*, 2001.
3. S. Kovvuri, V. Pandey, D. Ghosal, B. Mukherjee, and D. Sarkar, "A call-admission control (CAC) algorithm for providing guaranteed QoS in cellular networks," In *International Conference on Broadband Wireless Access Systems*, 2000.
4. D. Sarkar, "Two Optimal Encodings for Three Layer BAM," in *Proceedings of the Applications and Science of Computational Intelligence II*, 1999.
5. P. O'Hara-Murdock, C. McClure, O. Lagc, D. Sarkar, and R. Tamer, "MAPP: A Multimedia Instructional Program for youths with Chronic illness," in the *Proceedings of the Mid-South Instructional Technology Conference*, March 1999, abstract only.
6. H. Schmidl and D. Sarkar, " Classification of Chords by Neural Networks," in *Applications and Science of Artificial Neural Networks*, April 1998.
7. D. Sarkar, "A Three-Stage Architecture for Bidirectional Associative Memory," in *Proceedings of the International Conference on Neural Network?*, 1996.
8. D. Sarkar, "Empirical Estimation of Generalization Ability of Neural Networks," in *proceedings of the Applications and Science of Artificial Neural Networks*, April 1996.
9. D. Sarkar, "Ortho-Ordcent Initialization of FFANNAs to Improve Their Gncrcralization Ability," in *Applications and Science of Artificial Neural Networks*, April 1995.
10. D. Sarkar, "Randomness in Generalization Ability: A Source to Improve It?," in *Proceedings of the International Conference on Neural Networks*, 1994.
11. Y-C. Liu and D. Sarkar, "Integration of On-Line and Batch Versions of the EBP Algorithm and Its Three Cost-Effective Approximate Implementations," in *Proceedings of the World Congress on Neural Networks*, 1994.
12. S. Bancrjee and D. Sarkar, "Hypercube Connected Rings: A Fault-Tolerant and Scalable Archi-tecture for Virtual Lightwave Network Topology," in *Proceedings of the IEEE Infocom*, 1994.

13. L. F. Bautista and D. Sarkar, "Performance Study of Linearly Connected Parallel Machines Through Simulation," in *Proceedings of the 26th Hawaii International Conference on System Sciences*, 1993.
14. Y. M. Pircz and D. Sarkar, "Back Propagation Algorithm with Controlled Oscillation of Weights," in *Proceedings of the International Conference on Neural Networks*, 1993.
15. D. Sarkar, "Improving Generalization Through Multiple Redundant Output Units," in *Proceedings of the World Congress on Neural Networks*, 1993.
16. S. Banerjee, B. Mukherjee, and D. Sarkar, "Heuristic Algorithms for Constructing Near-Optimal Structures of Linear Multihop Lightwave Networks," in *Proceedings of the IEEE Infocom*, 1992.
17. N. Deo, S. Prasad, and D. Sarkar, "Some Fast PRAM Algorithms for Matching Parentheses," in *Proceedings of Workshop on Parallel Compilation*, 1990.
18. S. Das and D. Sarkar, "Invariant Computation of Petri Nets for Analysis of Distributed Systems," in *Proceedings of First Annual IEEE Symposium on Parallel and Distributed Processing*, May 1989, Dallas.
19. N. Deo and D. Sarkar, "Optimal Parallel Algorithms for Merging and Sorting," in *Proceedings of the Third International Conference on Supercomputing*, May 1988, Boston, MA.
20. D. Sarkar and N. Deo, "An Optimal Parallel Parsing Algorithm for a Class of Block-Structured Languages," in *Proceedings of 1987 International Conference on Parallel Processing*, August 1987, St. Charles, IL.
21. D. Sarkar and N. Deo, "Parallel Algorithms for Parenthesis Matching and Generation of Random Balanced Sequences of Parentheses," in *Lecture Notes in Computer Science*, Vol. 297, pp. 970-984, 1987.
22. D. Sarkar and N. Deo, "Estimating the Speedup in Parallel Parsing," in *Proceedings of 1986 International Conference on Parallel Processing*, August 1986, St. Charles, IL.

17. Other works, publications and abstracts :

1. D. Sarkar, Producer of the interactive multimedia CD-ROM, "MAPP Module 1: Diabetes, Puberty & Pregnancy." 1998.
2. D. Sarkar, Producer of the interactive multimedia CD-ROM, "MAPP Module 3: Peer Pressure, Causal and Intimate Relationships." 1998.
3. D. Sarkar, Producer of the interactive multimedia CD-ROM: "MAPP Module 1: Sickle Cell Disease, Puberty & Pregnancy." 1999.

18. Other works accepted for publication :

19. Submitted papers :

1. S. Kovvuri, V. Pandey, D. Ghosal, B. Mukherjee, and D. Sarkar: "A Call-Admission Control (CAC) Algorithm for Providing Guaranteed QoS in Cellular Networks:" [an extended version] submitted for publication.
2. U. K. Sarkar, S. Ramakrishnan, and D. Sarkar: "Modeling Full-Length Video Using Markov-Modulated Gamma-Based Framework:" [an extended version] submitted for publication.
3. U. K. Sarkar, S. Ramakrishnan, and D. Sarkar, "Study of Full-Length VBR Video-Trace Segmentation Methods for Modeling the Internet Traffic," submitted for publication.

20. Technical reports and manuscripts :

- T1. D. Sarkar and N. Deo, "Estimating the Speedup in Parallel Parsing," Tech. Report No. CS-85-135, Computer Science Department: Washington University, Pullman, 1985.

- T2.** V. Aggrawal, N. Deo, and D. Sarkar, "The Knapsack Problem with Disjoint Multiple-Choice Constraints," Tech. Report No. CS-86-156, Computer Science Department, Washington University, Pullman, 1986.
- T3.** D. Sarkar and N. Deo, "An Optimal Parallel Parsing Algorithm for a Class of Block-Structured Languages," Tech. Report No. CSTR-87-01, Department of Computer of Science, University of Central Florida, Orlando, 1987.
- T4.** D. Sarkar and R. Guha, "A Fast Distributed Deadlock-Detection Algorithm for Hypercube," Tech. Report No. CS-TR-87-02, Department of Computer of Science, University of Central Florida, Orlando, 1987.
- T5.** D. Sarkar and N. Deo, "Parallel Algorithms for Parenthesis Matching and Generation of Random Balanced Sequence of Parentheses," Tech. Report No. CS-TR-87-03, Department of Computer of Science, University of Central Florida, Orlando, 1987.
- T6.** S. Das, D. Sarkar, V. Agrawal, and L. Patnaik, "Invariant-Preserving Petri Net Reduction and Condition for Invariant-Existence;" Tech. Report No. CS-TR-87-12, Department of Computer of Science, University of Central Florida, Orlando, 1987.
- T7.** N. Deo and D. Sarkar, "Optimal Parallel Algorithms for Merging and Sorting," Tech. Report No. CS-TR-87-19, Department of Computer of Science, University of Central Florida, Orlando, 1987.
- T8.** D. Sarkar and R. Guha, "Mapping a Class of Algorithms from Binary-Tree Machines to Linear Arrays," Tech. Report No. CS-TR-88-17: Department of Computer of Science, University of Central Florida, Orlando, 1988.
- T9.** D. Sarkar and I. Stojmenovic, "An Optimal Parallel Circle-Cover Algorithm," Tech. Report No. TR-89-01, Computer Science Department, University of Ottawa, Ottawa, Canada.
- T10.** D. Sarkar and I. Stojmenovic, "An Optimal Parallel Algorithm for Minimum Separation of Two Sets of Points," Tech. Report No. TR-89-23, Computer Science Department, University of Ottawa, Ottawa, Canada.
- T11.** D. Sarkar and A. Mukherjee, "Design of Optimal Linear Arrays for the Transitive Closure Problem," Tech. Report No. TR-01-90, Department of Math. and Computer Science, University of Miami, Coral Gables, FL- 33124.

PROFESSIONAL

21. Funded Research Performed (including all grants received in the last five years, identifying the principal investigator):

1. Pregnancy Prevention Program for Chronically Ill Youths (9-14 Years); A Multimedia Approach (MAPP), Total budget \$365,331 for the period Oct 97 - Sept 98; my part of the budget \$24,768 excluding 53% indirect cost, (PI: Peggy O'Hara)
2. Multimedia AIDS Prevention Program for Youths in Juvenile Justice Facilities; my part of the budget \$1,900 (for the period June 97 - April 98, PI: Peggy O'Hara).
3. Pregnancy Prevention Program for Chronically Ill Youths (9-14 Years); A Multimedia Approach (MAPP), Total budget \$323,446 for the period Oct 98 - Sept 99; my part of the budget \$41,118 not including 26% indirect cost, (PDs: Onelia Lage, M.D., and Peggy O'Hara, Ph.D.)

22. Editorial responsibilities (Reviews papers for):

- o IEEE Transactions on Computers
- o IEEE Transactions on Neural Networks
- o IEEE Transaction on Parallel and Distributed Systems

- The Journal of Parallel and Distributed Computing
- Information Processing Letters
- International Conference on Parallel Processing
- International Conference on Computing and Information

23. Professional and Honorary Organizations (members; officer; date):

- Senior Member IEEE, IEEE Computer Society, and member Association of Computing Machinery (ACM).
- Faculty advisor of the ACM Student Chapter at UM.

24. Honors and Awards:

Third Prize, All India Student Design Contest in Electronics, 1982, Conducted by Institute of Engineers (India).

Biography appeared in *Who's Who in the South, and Southwest*, 23rd Edition

TEACHING

25. Teaching Specialization (courses taught):

- Computer Programming II (CSC/MTH 220)
- Assembly Language Programming (CSC/MTH 228)
- Introduction to Digital Computer Systems (CSC/MTH 350)
- Data Structures and Algorithm Analysis (CSC/MTH 517)
- Interpreters and Compiler Theory (CSC/MTH 518)
- Programming Languages (CSC/MTH 519)
- Introduction to Computer Graphics (CSC/MTH 529)
- Algorithm Design and Analysis (CSC/MTH 540)
- Introduction to Artificial Intelligence (CSC/MTH 545)
- Multimedia Systems (CSC/MTH 555)
- Introduction to Software Engineering (CSC/MTH 597)
- Introduction to Multimedia Computing (CSC/MTH 597)
- Introduction to Parallel Processing (CSC/MTH 598)
- Parallel Algorithms (CSC/MTH 628)
- Introduction to Expert Systems (CSC/MTH 645)
- Introduction to Neural Computing (CSC/MTH 646)
- Advanced Multimedia Systems (CSC/MTH 655)
- Mobile Computing (CSC 688)

26. Thesis and Dissertation Advising/Post-doctoral student supervision (chairman or committee member; topic; student name; date):

1. Chairman; A Voice-Data Integration Protocol for Open-Ring/Active-Bus Networks; Felix E. Quevedo; M.S.; 1990.
2. Chairman; Optimal Broadcasting on the Star Graph; Victor E. Mendia; M.S.; 1990.
3. Chairman; Design and Analysis of Parallel Algorithms for Dynamic Programming Problem and Fuzzy Arithmetic; Hassen Dhrif; M.S.; 1990.
4. Chairman; Product Networks: A Family of Graphs from Group Model; Wing Tong; M.S., 1990.
5. Chairman; Incremental Concept Formation Using Fuzzy Set Theory; Bettina Schmidt; M.S.; 1991.
6. Chairman; A Language Based Simulator for Connectionist Models; Alejandro Jose Roman; M.S.; 1991.
7. Chairman; Performance Study of Linearly Connected Parallel Machines Through Simulation; Lydia Fernandez; M.S.; 1992.
8. Chairman; Handwritten Character Recognition Through Neural Networks; Andres Guevara; M. S.; 1992.
9. Chairman; Back Propagation Algorithm with Controlled Oscillation of Weights; Yolanda M. Pircz; M.S.; 1992.
10. Chairman; IMACS: An Intelligent Melodic Analysis and Composition System; Kip Irvin; M.S.; 1995.
11. Chairman; Neural Network Pruning using Principal Component Analysis; Meena K. Kunjathapatham; M. S.; 1998.
12. Chairman; A CORBA-Based Middleware Architecture for Building Open and Interoperable Geographic Information Systems; Steven H. Wong; M.S.; 2000.
13. Chairman; Design and Implementation of a Medical Information System; Xiaorong Mei; 2000.
14. Chairman; A Novel Cache Distribution Heuristic Algorithm for a Mesh of Caches and Its Performance Evaluation; Jorge Escorcia; 2000.
15. Chairman; A Method to Study Bandwidth Requirement in a Hierarchical Caching Network and Its Performance Evaluation; Gaolai Peng; 2000.
16. Chairman; A Study of Channel Allocation Schemes for the Improvement of QoS in Cellular Networks; Satya Kovvuri; 2000.
17. Chairman; Iterative Algorithms for Performance Evaluation of Wireless Networks; Dmitry Fedyanin; 2000.
18. Chairman; A Method to Improve Internet Caching by Efficient Cache Distribution; Naveed Ahmend; 2001

27. Students Currently Being Advised (as chairman of the committee) :

1. Sivaramakrishna Mopati, M.S., Wireless Computing, expected to complete by Spring 2002
2. Wei Zhou, M.S., VBR Video Traffic Modeling, expected to complete by Spring 2002
3. Huaichen Yang, M.S., Virtual Private Networks, expected to complete by Spring 2002
4. Wing Tong, Ph.D., Design and Evaluation of CAC Algorithms for Multimedia Communication in Wireless Networks
5. Carlos Canas, Ph.D., Analytical Study of CAC Algorithms for Wireless Networks

28. Served as member of six Ph. D. dissertation committees and twelve M. S. thesis committees in various departments.

SERVICE

29. University committee and Administrative Responsibilities :

1. Member of the Subcommittee on Degrees and Programs; Graduate School
2. Director of Graduate Studies, Computer Science
3. Member of the Computer Science hiring Committee
4. Member of the Computer Science Graduate Committee
5. Director of undergraduate Medical Informatics program