RESUME

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Research Background

- Graph theoretic modeling, analysis and problem solving.
- Parallel algorithm to architecture mapping – Star interconnection network; mapping irregularly structured graphs
- Algorithms – parallel maximal matching; approximation algorithm; search
- Data flow and demand driven computation, Systolic architectures

Developmental Skills

- UNIX software engineer: IBM AIX 4.2; Cluster HACMP; Mirror- HAGEO (geographic mirror).
- Windows Program Manager, performance & reliability: Windows XP and Server 2003/2008;
- Solution Architect, Windows HPC server – CCS and HPCS
- NET 3.5 development – WCF, Parallel Extension, Parallel LINQ
- Development experience in parallel programming using MPI, Open MP, PVM

Interest

- Graph modeling in dealing with complexity, load management and problem solving
- Parallel programming development, monitoring, remapping loads

Detailed Experience:
(10 years industry and 18 years academic)

Microsoft Corporation:
- Senior Solutions Architect, GISV, DPE in High Performance Computing (HPC) on Windows HPC cluster computing servers. Redmond Main campus, Aug. 20 – date.
- Academic Relations Manager, Mid-Atlantic District – Mar 2003 – Aug. 19.
- Program Manager, Windows Base OS – Feb 2001
    - *, test and Spec innovative features for Windows range from reliability, performance and availability. Competitive analysis and determine issues to track.*
    - *Develop features and test alpha, integrate feature*

IBM Corporation:
- Software Development Staff Member, High Availability Geographic Mirror (HAGEO/HACMP) for AIX 4.2 – May 1999 – 2001
    - *Develop and maintain device driver involving TCP/IP and AIX system code. Worked with AIX 4.2 system code management and development.*
    - *Spec features; maintain HAGEO for AIX 4.1 and 4.2*

Regional Computer Center, Calcutta, India, Jan 1983 – Jul 1984
- Senior Systems Analyst, Education and Training, Main frame Burroughs Corp. B-6800
    - *Conduct training programs in project analysis, system development; training etc*

Computronics India Ltd.
- Systems Programmer; IBM 360 MFT/MVT – IMS, Dec 1978 – April 1979
    - *Develop, reengineer IBM 360 OS source for new software product development.*

Faculty in Computer Science and Engineering

- **Rutgers University 1997-98, Grambling State University 1997 (summer), Louisiana Tech University 1996-97, Western Washington University 1995- 96** Visiting Professor in Computer Science
- **Indian Institute of Technology – Computer Science and Eng.**
- *Joined as Lecturer in 1979, left for RCC Calcutta in 1982, rejoined as Assistant Professor in 1984, on leave during 1988 – 1990; promoted to Associate Professor in 1991 and worked until 1996*
- **Indian Institute of Technology – Computer Center**
- *Senior Research Asst 1977 – 1978: Program development consultancy to campus researcher and students.*

Highlights

- Solution development for top ISV in parallel computing industry – Windows HPC (2007 -)

- Organized several workshops and meetings at universities highlighting use of products in research and teaching. *This includes a workshop at Johns Hopkins University on Computational Science in Oct 2006*
- Best performer in 2005 (Q3): created adoption of Visual Studio in teaching Compiler Design at George Mason University. *This was also presented at SIGCSE premier conference on Computer Science Education*
- Windows base kernel patents- Service dependence and kernel pool management. (2003)
- Analyzed how Netcraft.com tracks web sites and hosting for Windows, Solaris, AIX, FreeBSD, Linux and other web servers. *Developed scripts to simulate working and examined algorithms in details. (2001)*
- IBM HAGEO spec for AIX 4.2. Development. (1999)

Projects and students

- Supervised Ph.D. students – Dataflow computers (1991), systolic architecture (1991), parallel algorithms (1996), interconnection network (1996)
- Book chapter in "Advances in Parallel Computing" (1992) Ed. D.J.Evans, JAI Press.
- Technical Program Committee member – First International Conference on High Performance Computing, Bangalore, India (1994) and Third International Conference on High Performance Computing, Trivandrum, India (1996).
- Reviewer IEEE Transactions on Parallel and Distributed Systems and many conferences in this area.
- Center for Development of Telemetry (CDOT) - developing new task management software and new visualization system (1993)
- Center for Development of Advanced Computing – developed task visualization system. (1992)
- Co-PI for NASA (Langley) grant on Parallel Architecture for Unmanned Deep Space Missions (1989-90)
- Chief Coordinator in Computer Literacy and Studies in Schools project (1986-88)
- First undergraduate level course in computer science and engineering in India in 1979 (Programming PL/I).
- Member of the team of faculties who developed the first CSE course at undergrad level at IIT
- Summer School on Parallel Programming Systems – BARC, ISRO,CDAC, ECIL sponsored at IIT (1994)
- Best Dept. of Atomic Energy (Govt. of India)scholar recognition for innovative hardware development for logic state analyzer (1976)
- Best research paper, Institute of Electronics and Telecommunication Engineers (1977-1978)

Research Publications

1. o(log4 n) time parallel maximal matching algorithm using linear number of processors. Parallel Algorithms Appl. 19(1): pp. 19-32, 2004 (with A.Datta)
2. An Efficient Scheme to Solve Two Problems for Two-Terminal Series Parallel Graphs, Information Processing Letters, Vol. 71(1), 9-15, 16 July 1999 (with A.K.Datta)
3. A Java Implementation for a New Load Balancing Strategy, ACM 1999 Java Grande Conference (with P. Dey)
4. Embedding Torus on the Start Graph, IEEE Tran. Parallel and Dist. Systems, Vol. 9, No. 7, July 1998 (with D.K.Saikia)
5. Data-parallel Programming on a Re-configurable Parallel Computer, Journal of IETE, Vol. 15, No. 3, 1997-98 (with Rajesh, Perisamy, Selvekumar. S).
6. Two Ranking Schemes For Efficient Computation on the Star Interconnection Network, IEEE Tran. Parallel and Dist. System, Vol. 7. No. 4, April 1996 (with D.K.Saikia)
7. A Parallel Algorithm for Maximal Matching based on Depth First Search, Parallel Algorithms and Applications, Vol. 5, pp. 161 – 164, 1995 (with A.K. Datta)
8. 1-approximation algorithm for Bottleneck Maximum Matching, Information Processing Letters, Vol. 55(1), 41-44, July 7, 1995
9. A New Algorithm for Processor Assignment, IRREGULAR 95, Lyon, France 4-6 Sept. 1995 (Lecture Notes in Computer Science, Vol. 980, pp. 91-113)
10. Order Preserving Communications on the Start Interconnection Network, Parallel Computing, Vol. 21, 1995, pp. 771-782, North Holland, May 1995
11. Efficient Routing on the Star Network for General Ascend/Descend algorithm and pipelining, DIMACS Workshop on Organizing and Moving Data in Parallel Computers, Jan 26-28, 1994, Princeton Univ. Princeton NJ
12. Processor Assignment with bounded quality and speed, DIMACS Workshop in Interconnection Network, Mapping and Scheduling Parallel Computation, Feb 7-9, 1994
13. A Parallel Algorithm for Maximal Matching of a Graph, National Seminar on Theoretical Computer Science 1992, Calcutta, June 17 – 19 (with AK Datta)
14. A Parallel Algorithm for Maximal Matching, CONPAR 92-VAPPV, Ecole Normale Superieure de Lyon, France – Sept 1-4, 1992 (Lecture Notes in Computer Science. Vol. 634) (with A.K.Datta)
15. Hardware Efficient Systolic Solution to the Two-dimensional Discrete Fourier Transform, Microprocessor and Microprogramming 33, 1991, pp 111-117, North Holland (with S.Sarkar, A.K.Majumdar)
16. Simulating Pyramids on Hypercube, PARCOM-90, Dec 9-11, 1990, India (also in Frontiers of Parallel Computing, ed. Bhatkar, Basu, Purohit and Rege, Norosha Publishers, pp 77-83, 1980 (with R. Guha)
17. Decomposition and transformation techniques for Star interconnection networks, 11th Intl. Conference on Mathematical and Computer Modeling and Scientific Computing, Mar 31-Apr 3, Washington DC, 1997 (invited paper)

18. Data Communication in the Star interconnection network, Proc. First Intl. Workshop on Parallel Processing, pp. 435-440, Dec 26-31, 1994 (with D.K.Saikia)
19. Gossiping in the Star interconnection network, 2nd Austroasian Conference, Australia 29-30 Sept 1995 (with D.K.Saikia)
20. Embedding Torus on the Star interconnection network, Intl. Conference on High Performance Computers, New Delhi, 27 -31 Dec 1995 (with R. Badrinath and D.K.Saikia)
21. Career Aspirations of Engineering Students – A Case Study at IIT Kharagpur, Indian Journal of Tech. Education, ISSN 0971 – 3034, Vol. 17, No. 3, pp 14-19, July – Sept, 1994 (with Bhaskaran, Abidi, Bhattacharya)
22. Transputer, Occam and CSP in teaching parallel computing, Indian Transputer Users Group Annual Meet (ITUG – 93), Dec 13-15, India 1993
23. Optimal scheduling under limited number of ports, Proc. National Seminar on Parallel Computer Systems and their Applications, Calcutta, India Oct 29-30, 1990
24. Embedding a Pyramid on a Hypercube with Minimum Routing Load, Proc. 5th Distributed Memory Conference, Charleston, South Carolina, April 9-12, 1990
25. An Optimal Communication Strategy for a Distributed System with limited number of ports per node, 4th SIAM Conf. on Parallel Processing for Scientific Computing, Chicago, USA Dec 11-13, 1989 (with Cezzar, Banga)
26. An efficient method for port assignment for optimal communication complexity in parallel computers, Proc. Supercomputers for Science and Technology, Natinal Conference, India 1988 (with Banga)
27. Systolic array implementations of some graph problems, Microprocessors and Microprogramming, North Holland, 1991 (with S.Sarkar, A.K.Majumdar)
28. An optimal systolic solution to the two-dimensional discrete Fourier transformation, IEEE Tencon 91 Conference, Aug. 1991, India (with S.Sarkar)
29. On Maximum Edge-deletion bipartite subgraph problem, Congressus Numerantum, Vol. 74, pp. 38-54, Jan 1990
30. A Parallel Approximate Algorithm for the Minimum Edge Deletion Bipartite subgraph problem, International Journal of Combinatorics, Information and System Science, Vol. 14, No. 2-3, pp. 105-117, 1989 (with P.Chaudhuri)
31. Applicative Caching on Dataflow Computer, in Advances in Parallel Comuting, Vol. II, pp. 1-22, Editor. D.J Evans, JAI Press, 1992
32. System Fault Diagnosis of n-cube network by reconfiguration, Intl. Conf. on Fault Tolerant Systems and Diagnostics, Czechoslovakia, June 1986 (with A.Pal)
33. On State Assignment of Asynchronous Sequential Machines, Proc. COMPINT 85, Montreal, Canada, IEEE, ACM publications, pp. 433 – 440, 1985
34. On Computing Stratified Structure of Boolean functions from n-cubes, Journal of Computers and Electrical Engineering, Pargamon Press, No. 1, Jan 1984
35. An Efficient Tree generation algorithm, Journal IETE, Vol. 27, 930, pp. 105-109, 1981. (with S Sensarma, A. Rakshit)
36. On the implementation of caching in a dataflow computer, Proc. Intl. Conference on Computers and Information (ICCI), Toronto, Canada, May 23-27, pp 173 – 177, 1989.

37. On Optimal Dataflow Program Graph Partitioning, Proc. Conference on Parallel Computing, Calcutta, India, Dec 1988 (with M.K. Banga)
38. On a Dataflow Simulator, IEEE Seminar on Distributed Computer Control and Monitoring Systems, New Delhi, Nov 1985 (with S.Das)
39. A Logic based response analyzer for computer aided systems, ISELDECS, IIT, Dec 1987 (with D. Mitra)
40. Bipartite Subgraphs of a graph, 16th Annual Convention of Computer Soc. of India, 1981
41. Privacy and Security of Data Banks – a survey, 15th Annual Convention of Computer Society of India, 1980.
42. Programming Course – an experience, Communications of Computer Society of India, July 1980 (with P. Bhattacharya)
43. An Algorithm for the Production of Unitary Cubes, 23 Midwest Symp. On Circuits and Systems, USA 1980
44. All Cycles of a Finite non-oriented net, 22nd Midwest Symposium on Circuits and Systems, USA 1979 (with S. Sensarma, A. Rakshit)
45. An Algorithm for the Generation of Trees and two-trees of a network graph, 20th Midwest Symposium on Circuits and Systems, USA 1977 (with S. Sensarma, A. Rakshit)
46. A Programmable Logic State Analyzer, Journal of IETE, Vol. 23 (7), pp 434-439, 1977 (with A.K.Choudhuri, A.Pal) - **awarded best paper in 1977-78.**