Girija J. Narlikar

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Research Interests

Wireless systems, data networking (including DoS defence and packet lookup/classification), mobile computing, multithreaded and low-power systems, scheduling.

Education

Carnegie Mellon University

Ph.D. in Computer Science. Dissertation: "Space-Efficient Multithreading".   May 1999.
M.S. in Computer Science   May 1995.

Indian Institute of Technology, Bombay.

B.Tech. in Computer Science and Engineering (GPA: 9.6/10.0)   May 1993.

Research Experience

- **Bell Laboratories Research, Lucent Technologies**   August 1999–Present.

  Member of Technical Staff in the Computing Sciences Research Center. Areas of research include wireless and data networking, distributed systems, and high-performance multithreading.

- **Carnegie Mellon University**   September 1993–May 1999.

  Graduate student. Conducted research on space-efficient multithreading, parallel language implementation, and N-body algorithms. Designed and implemented provably space and time efficient scheduling algorithms for parallel, multithreading systems.

- **NEC Research Institute**   June 1998 and Summer 1997.

  Consultant and Summer Intern. Designed and implemented a bulk-synchronous distributed object system with a global name space on a cluster of PCs with a fast interconnect.

- **DEC Systems Research Center**   Summer 1995.

  Summer Intern. Designed and implemented low-overhead runtime optimizations for a distributed shared memory library on a network of Alphas.

- **Indian Institute of technology, Bombay**   August 1992-April 1993.

  Senior Thesis. Formalized an algorithm for Incremental Dataflow Analysis.

- **Center for Development of Advanced Computing (CDAC), India**   Summer 1992.

  Summer Intern. Ported gcc to a transputer platform (T-800) and compared performance with the native compiler.

Teaching Experience

- **Carnegie Mellon University**   Fall 1995.

  Teaching Assistant for senior-level Operating Systems class. Guided students in the implementation of a kernel (including virtual memory management) and a file system. Helped create and grade exams and projects.

- **Carnegie Mellon University**   Spring 1994.

  Teaching Assistant for undergraduate Data Structures and Complexity class. Taught four recitation classes a week, helped create and grade exams.

- **Indian Institute of Technology, Bombay**   Fall 1991.

  Teaching Assistant for introductory programming class. Conducted recitations and graded exams and projects.

Refereed Publications

- G. Narlikar and G. Wilfong and L. Zhang. *"Designing Multihop Wireless Backhaul Networks with Delay Guarantees"*, Proc. IEEE Infocom, April 2006.

- S. Lee, G. Narlikar, M. Pal, G. Wilfong and L. Zhang. *Admission Control for Multihop Wireless Backhaul Networks with QoS Support"*, Proc. IEEE WCNC, April 2006.

- F. Zane, G. Narlikar and A. Basu. *"CoolCAMs: Power-Efficient TCAMs for Forwarding Engines"*, Proc. IEEE Infocom, April 2003.

- A. Basu and G. Narlikar. *"Fast Incremental Updates for Pipelined Forwarding Engines"*, Proc. IEEE Infocom, April 2003.

- S. Kaxiras, G. Narlikar, A. D. Berenbaum, and Z. Hu. *"Comparing Power Consumption of an SMT and a CMP DSP for Mobile Phone Workloads"*, Proc. Intl. Conf. on Compilers, Architecture, and Systhesis for Embedded Systems (CASES), Nov 2001.

- G. Narlikar and F. Zane. *"Performance Modeling for Fast IP Lookups"*, Proc. ACM Sigmetrics, June 2001.

- C. Young, Lakshman Y.N., T. Szymanski, J. Reppy, D. Presotto, R. Pike, G. Narlikar, S. Mullender, and E. Grosse. *"Protium: An Infrastructure for Partitioned Applications"*, Proc. Workshop on Hot Operating Systems (HotOS-VIII), May 2001.

- G. Narlikar, Lakshman Y.N., and T.K.Ho, *"TaBLA: A Client-Based Scheduling Algorithm for Web Proxy Clusters"*, Proc. IEEE Intl. Performance, Computing, and Communications Conference (IPCCC), April 2001.

- S. Kaxiras, Z. Hu, G. Narlikar, and R. McLellan, *"Cache Line Decay: A Mechanism to Reduce Cache Leakage Power"*, ASPLOS Workshop on Power-Aware Computer Systems (PACS), Nov 2000.

- G. Narlikar. *"Scheduling threads for low space requirement and good locality"*, Proc. ACM Symposium on Parallel Algorithms and Architectures (SPAA), June 1999.

- M. Goudreau, K. Lang, G. Narlikar and S. Rao. *"BOS is Boss: A Case for Bulk-Synchronous Object Systems"*, Proc. ACM Symposium on Parallel Algorithms and Architectures (SPAA), June 1999.

- G. Narlikar and G. Blelloch. *"Space efficient implementation of nested parallelism"*, ACM Transactions on Programming Languages and Systems (TOPLAS), Vol.21(1), January 1999.

- G. Narlikar and G. Blelloch. *"Pthreads for dynamic and irregular parallelism"*, Proc. SC98: High Performance Networking and Computing, November 1998. *(Best student paper award.)*

- J. Hardwick, G. Narlikar, and J. Sipelstein. *"Interactive Simulations on the Web: Compiling NESL into Java"*, Concurrency: Practice and Experience, Vol.9(11), November 1997. Also appeared in Proc. ACM Workshop on Java for Science and Engineering Computation, June 1997.

- G. Blelloch, P. Gibbons, Y. Matias, and G. Narlikar. *"Space efficient scheduling of parallelism with synchronization variables"*, Proc. ACM Symposium on Parallel Algorithms and Architectures (SPAA), June 1997.

- G. Narlikar and G. Blelloch. *"Space efficient implementation of nested parallelism"*, Proc. ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming (PPoPP), June 1997.

- G. Blelloch and G. Narlikar. *"A practical comparison of N-body algorithms"*, Parallel Algorithms. Series in Discrete Mathematics and Theoretical Computer Science, Volume 30, 1997.

Other Publications

- S. Kaxiras, A. Barenbaum and G. Narlikar. *"Simultaneous Multithreaded DSPs: From High Performance to Low Power"*, Bell Labs, Lucent Technologies Technical Memorandum, Nov 2000.

- G. Narlikar. *"A Parallel, Multithreaded Decision Tree Builder"*, Tech. Report CMU-CS-98-184, December 1998.

- G. Narlikar and G. Blelloch. *"Pthreads for dynamic parallelism"*, Tech. Report CMU-CS-98-114 (expanded version of SC98 paper), April 1998.

- G. Narlikar and G. Blelloch. *"A framework for space and time efficient scheduling of parallelism"*, Tech. Report CMU-CS-96-197, December 1996.

- G. Blelloch and G. Narlikar. *"A comparison of two N-body algorithms"*, Proc. DIMACS Implementation Challenge Workshop, October 1994.

Honors

- Bell Laboratories Teamwork award for research on the BSR (a 3G/4G wireless system), October 2004.

- Bell Laboratories Teamwork award for research and protyping effort on the HSDPA protocol stack (HSDPA is a high speed 3/3.5G wireless standard), June 2003.

- Finalist for Best Paper award at Infocom 2003.

- Best Student Paper Award at "SC98: High Performance Networking and Computing", November 1998.

- Graduate Student Member of Sigma Xi Scientific Research Society, June 1997–May 1999.

- Graduate Research Fellowship, CMU Computer Science Department, August 1993–May 1999.

- Deshmukh Gold Medal for graduating with the highest GPA in the Computer Science and Engineering Department at IIT Bombay, May 1993.

- National Talent Scholarship awarded by the Government of India, 1987-1993.

Professional Activities

- Member of Program Committee, SIGMETRICS'02, SC'99.

- Reviewer for the Journal of the ACM, Theory of Computing Systems, ACM/IEEE Trans. Networking, ACM Trans. on Architecture and Code Optimization, Currency: Practice and Experience, IJCS, Infocom, PPoPP, IPPS, MICRO and HiPC.

- Member of ACM, IEEE, IEEE Computer Society, Usenix.