Abhinav Sarje

abhinav.sarje@gmail.com • (515) 203 9030 • www.abhinavsarje.net

Education

Iowa State University, Ames, IA, USA — August 2005 – August 2010
PhD Candidate in Computer Engineering (*advisor:* Dr. Srinivas Aluru) — *GPA:* 3.97/4.00
Thesis: Applications on emerging paradigms in parallel computing

Indian Institute of Technology Guwahati, Guwahati, India — August 2000 – May 2004
Bachelor of Technology in Computer Science & Engineering — *GPA:* 8.35/10.00

Research Interests

- High Performance Computing
- Parallel Algorithms & Applications
- Algorithms on Emerging Architectures
- Cloud Computing
- Computational Biology and Scientific Computing
- String and Text Algorithms

Work Experience

AOL Inc., Truveo — Software Engineer
San Francisco, CA, U.S.A. — September 2010 – *present*
Part of the web video search group, focussing on building a Truveo notification system to notify subscribers about the corresponding new videos for celebrities and TV shows found on the web, and celebrity search based on video and audio detection.

Iowa State University, Computer Engineering Department — Research Assistant
Ames, IA, U.S.A. — August 2005 – *present*
Worked on the development and implementation of parallel algorithms on emerging paradigms for various problems with applications in computational and systems biology, and materials science. This includes algorithms for genomic alignments and scheduling of all-pairs computations on emerging multi- and many-core architectures, cloud computing on tree structures, and provably optimal parallel algorithms for the all-k-nearest neighbor problem, and multi-search on trees.

Samsung India Software Operations — Software Engineer
Bangalore, India — December 2004 – July 2005
Contributed to the design and development of traffic management algorithms for network traffic distributor (IP switch). Involved in the development and testing of IP Multimedia Subsystem (IMS) for large scale 3G wireless network deployment.

Center for Development of Telematics — Research Engineer
Bangalore, India — August 2004 – December 2004
Involved in the development and testing of network management software for telecommunications switches and servers. Worked on VoIP management project being initiated in the group.

Linköping University, Computational Biology Group, IFM — Project Student
Linköping, Sweden — May 2003 – July 2003
Worked on a survey of data clustering methods used for microarray data, and implementation of agglomerative hierarchical clustering and basic k-means clustering algorithms as libraries in Java to be used by the researchers as modules for microarray data analysis.

Indian Institute of Technology Bombay, Computer Science Department — Summer Intern
Mumbai, India — May 2002 – June 2002
Worked on fault testing of Xilinx FPGA demonstration boards using VHDL to design testbeds.

Primary Graduate Research Work

- Parallel genomic alignments on heterogeneous multi-cores [C & Cell SDK].
- Accelerating pairwise computations on clusters of multi-cores [C++, Cell SDK, MPI-2 & CUDA].
- An abstract framework for trees structures on clouds [C++ & MPI-2].
- Provably optimal parallel algorithm for k-nearest neighbors and related problems [Ongoing].
- Parallel algorithm for multi-search on tree structures [Ongoing].

Relevant Graduate-level Course-work

Parallel Algorithms and Programming
Parallel Algorithms for Scientific Applications
Fundamental Algorithms in Computational Biology
Probabilistic Methods in Computer Engineering
Introduction to Computational Geometry
Distributed Algorithms
Theory of Computation
Computer Systems Architecture
Database Implementation
Principles of Compilers

Relevant Technical Skills

[*Expert/good knowledge of*]

- **Languages:** C++, C, Unix shell scripting, Ruby.
- **Parallel programming standards and paradigms:** MPI-2, nVidia CUDA, Intel TBB, IBM Cell SDK, OpenMP, Posix threads.
- **Parallel architectures:** Clusters, MPPs, many/multi-cores and heterogeneous systems including Cell B.E. and GPGPUs.

Select Publications

- **A. Sarje**, J. Zola and S. Aluru, **"Accelerating Pairwise Computations on the Cell Processors"**, IEEE Transactions on Parallel and Distributed Systems – Special Issue on High-Performance Computing with Accelerators, to appear August 2010.
- J. Zola, M. Aluru, **A. Sarje** and S. Aluru, **"Parallel Information Theory Based Construction of Genome-wide Gene Regulatory Networks"**, IEEE Transactions on Parallel and Distributed Systems, to appear 2010.
- **A. Sarje** and S. Aluru, **"Parallel Genomic Alignments on the Cell Broadband Engine"**, IEEE Transactions on Parallel and Distributed Systems, vol. 20, no. 11, pp. 1600–1610, 2009.
- **A. Sarje** and S. Aluru, **"A MapReduce Style Framework for Computations on Trees"**, in 39th International Conference on Parallel Processing (ICPP), to appear 2010.
- **A. Sarje**, J. Zola and S. Aluru, **"Constructing Gene Regulatory Networks on Clusters of Cell Processors"**, in proc. of the 38th International Conference on Parallel Processing (ICPP), pp. 108–115, 2009.
- **A. Sarje** and S. Aluru, **"Parallel Biological Sequence Alignments on the Cell Broadband Engine"**, in proc. of the 22nd IEEE International Parallel and Distributed Processing Symposium (IPDPS), pp. 1–11, 2008.
- **A. Sarje**, A. Chawre and S. Nair, **"Reinforcement Learning of Player Agents in RoboCup Soccer Simulation"**, in proc. of the 4th IEEE International Conference on Hybrid Intelligent Systems (HIS), pp. 480–481, 2004.
- **A. Sarje** and S. Aluru, **"Parallel Algorithms for Alignments on the Cell B.E."**, in Bioinformatics: High Performance Parallel Computer Architectures, Ed. B. Schmidt, Taylor & Francis Group/CRC Embedded Multi-Core Systems Series, July 2010.
- **A. Sarje**, J. Zola and S. Aluru, **"Pairwise Computations on the Cell Processor with Applications in Computational Biology"**, in Scientific Computing with Multicore and Accelerators, Eds. J. Dongarra, D. A. Bader and J. Kurzak, Chapman & Hall/CRC Computational Science Series, to appear 2010.
- **A. Sarje**, **"Parallel Techniques for Efficient Pairwise Computations on Emerging Architectures"**, in PhD Forum at the 24th International Parallel and Distributed Processing Symposium (IPDPS), 2010 (**TCPP best paper award**).
- **A. Sarje** and S. Aluru, **"A Mapreduce Style Framework for Trees"**, Technical Report, Department of Electrical and Computer Engineering, Iowa State University, 2009.

Professional Affiliations, Activities & Achievements

- Best paper award at TCPP PhD forum, held at IPDPS 2010.
- Research Excellence Award, Iowa State University, 2010.
- Graduate student member of the IEEE, and IEEE Computer Society.
- External referee for various conferences and workshops, including IPDPS 2010, ICPP 2010, CF 2010, ICCS 2010, COCOON 2009, PPAM 2009, IC3 2009, HiPC 2008, CPM 2008.

References

Available on request.