

NALINI M BELARAMANI

Department of Computer Sciences
The University of Texas at Austin
1 University Station C0500
Austin, TX 78712

Email: nalini@cs.utexas.edu
Mobile: (512) 569-4032
Office: (512) 232-7874
<http://www.cs.utexas.edu/~nalini>

EDUCATION

- Jan 2004 – Present **The University of Texas at Austin, USA.**
Ph.D. Candidate in Computers Sciences (degree expected May 2009).
Thesis Topic: Making Replication Systems Simpler.
Advisor: Prof. Mike Dahlin.
- Sep 1997 – Aug 2002 **The University of Hong Kong, Hong Kong.**
M.Phil. in Computer Sciences, August 2002.
Thesis Topic: A Component-based Software System with Functionality Adaptation for Mobile Computing.
Advisors: Dr. Cho-Li Wang and Dr. Francis C.M. Lau.
B.Eng. in Computer Engineering, May 2000.
First-class Honors.

RESEARCH INTERESTS

Distributed computing with emphasis on data replication and mobile environments.

RESEARCH PROJECTS

- Sep 2005 – Present **PADRE/PRACTI.** Designed and implemented a policy framework that greatly reduces development effort for distributed data replication systems. PADRE provides a software platform that provides set of common mechanisms such as storage, consistency bookkeeping, and data transmission. Replication systems can be easily constructed by specifying system design as policies. The policies consists of two parts: first, a set of predicates to block local data access for consistency and second, a set of routing rules for information propagation. Demonstrated the flexibility and ease of use of PADRE by implementing a dozen existing replication systems that cover a wide range of the design space including client-server systems, server-replication systems and peer-to-peer systems, each requiring only a couple of weeks of development time.
- Jan 2008 – Present **R/Overlog.** Designed a declarative routing language, R/Overlog, and implemented a R/Overlog-to-Java translator that enables concise specification of routing policies for replication systems built with PADRE.
- Jun 2005 – Aug 2005 **Distributed shared objects.** Designed and implemented a distributed object infrastructure that employed read/write statistics and cost/benefit analysis to determine whether to replicate or migrate an object over a set of nodes.
- Jan 2005 – May 2005 **Optimal online compilation.** Identified a set of optimizations that if enabled on the first compilation for methods with specific characteristics, improved the runtime performance of a Java program on JikesRVM.
- Sep 2004 – Dec 2004 **Self-tuning web application.** Designed an adaptive engine for a web-based bookstore software (TPC-W) that dynamically changed configuration options based on experienced workload so as to improve overall performance.

- Sep 2000 – Aug 2002 **Sparkle.** Conceived, designed and implemented a middleware and an application framework that enables resource-limited mobile devices to provide unlimited functionality to users. Sparkle applications are composed of a hierarchy of functionality components that are individually downloaded and cached when needed and discarded to recover resources. By implementing several components with the same functionality but with different resource requirements, a single Sparkle application can run on a heterogeneous set of devices by invoking the component with resource requirements best suited to the device. Implemented a photo-editing application that runs on a desktop and a Compaq iPaq device.
- Jun 1999 – Aug 1999 **Distributed search engine.** Designed and implemented a cluster-based search engine that carried out distributed crawling, indexing and load balancing.

WORK EXPERIENCE

- Sep 2004 – Present **Graduate Research Assistant, UT-Austin, TX, USA**
Worked on PRACTI, R/Overlog, optimal online compilation and self-tuning web-servers (see above for details).
- Jun 2005 – Aug 2005 **Summer Intern, IBM T.J. Watson Research Center, Hawthorne, NY, USA.**
Worked on distributed shared objects (see above for details).
- Jun 2004 – Aug 2004 **Research Assistant, HKU, Hong Kong.**
Worked on Sparkle (see above for details).
- Sep 2002 – Dec 2003 **Engineer, Motorola Semi-Conductors Hong Kong Limited, Hong Kong.**
Product team member for the *Innovative Convergence Platform* Project that developed multiple reference hardware and software configurations for mobile phones. My role involved: (1) *Software Release Management* – Oversaw and handled monthly software releases. Kept track of feature and bug lists for each release. Followed up with the software team on the status of bug fixes and required new features. (2) *Development* – Planned, negotiated, developed and rolled-out the incorporation of software-based license control for development tools that were used by regional teams and customers world-wide. (3) *Customer Support* – Provided technical support and made recommendations for software customizations to customers and regional teams in Korea, Taiwan, China, France, US, and Denmark.
- Jun 1999 – Aug 1999 **Research Assistant, The University of Hong Kong, Hong Kong.**
Worked on a cluster-based search engine (see above for details).

TEACHING EXPERIENCE

- Spring 2004 **Teaching Assistant, Introduction to Programming Languages, UT-Austin.**
- Fall 2001 **Teaching Assistant, Introduction to Operating Systems, HKU.**
- Fall 2000 **Teaching Assistant, Introduction to Database Systems, HKU.**

PROFESSIONAL SERVICE

- 2008 Student Member, Faculty Recruiting Committee, UT-Austin.
- 2005 Member, Committee for Graduate Student Recruiting Festival, UT-Austin.
- 2000, 2001 Graduate Student Representative, Engineering Faculty Board, HKU.
- 2000 Chairman, Computer Engineering 2000 Graduation Committee, HKU.
- 1998 Treasurer, Engineering Society, HKU.

REFEREED CONFERENCE PUBLICATIONS

- [1] **Nalini Belaramani**, Mike Dahlin, Lei Gao, Amol Nayate, Arun Venkataramani, Praveen Yalagandula, and Jiandan Zheng. PRACTI Replication. In *Proceedings of the Third Symposium on Networked Systems Design and Implementation (NSDI)*, pages 59-72, San Jose, USA, May 2006.
- [2] Pauline P. L. Siu, **Nalini Belaramani**, Cho-Li Wang, and Francis Lau. Context-Aware State Management for Ubiquitous Applications. In *Proceedings of the International Conference on Embedded and Ubiquitous Computing*, pages 776-785, Aizu, Japan, August 2004.
- [3] **Nalini Belaramani**, Cho-Li Wang, and Francis Lau. Dynamic Component Composition for Functionality Adaptation in Pervasive Environments. In *Proceedings of the Ninth International Workshop on Future Trends of Distributed Computing Systems (FTDCS)*. pages 226-232, San Juan, Puerto Rico, May 2003.

BOOK CHAPTERS

- [4] Francis Lau, **Nalini Belaramani**, Vivien Wai-Man Kwan, Pauline Siu, W.K. Wing, and Cho-Li Wang. Code On Demand and Code Adaptation for Mobile Computing. *The Handbook for Mobile Middleware*, Auerbach Publications, 2006.
- [5] Cho-Li Wang, X.L. Zhang, **Nalini Belaramani**, Pauline Siu, Yuk Chow, and Francis Lau. Software Infrastructure for Context-Aware Mobile Computing. *Enabling Technologies for Wireless E-Business*, Springer, 2006.
- [6] **Nalini Belaramani**, Yuk Chow, Vivien Wai-Man Kwan, Cho-Li Wang, and Francis Lau. A Component-Based Software Architecture for Pervasive Computing. *Intelligent Virtual World: Technologies and Applications in Distributed Virtual Environments*, World Scientific Publishing Co., 2004.

TECHNICAL REPORTS

- [7] **Nalini Belaramani**, Jiandan Zheng, Amol Nayate, Robert Soulé, Mike Dahlin, and Robert Grimm. PADRE: A Policy Architecture for Data Replication Systems (Extended). The University of Texas at Austin, Department of Computer Sciences, TR-08-25, May 2008.
- [8] **Nalini Belaramani**, Mike Dahlin, Amol Nayate, and Jiandan Zheng. Making Replication Simple with URSA. The University of Texas at Austin, Department of Computer Sciences, TR-07-57, October 2007.

THESES

- [9] **Nalini Belaramani**. A Component-Based Software System with Functionality Adaptation for Mobile Computing. Master's of Philosophy Thesis, The University of Hong Kong, August 2002.

POSTERS

- [10] **Nalini Belaramani**, Mike Dahlin, Amol Nayate and Jiandan Zheng. Making Replication Simple with PADRE. *The twenty-first ACM Symposium on Operating Systems Principles (SOSP)*, Stevenson, WA, USA, October 2007.

IN SUBMISSION

- [11] Jiandan Zheng, **Nalini Belaramani**, and Mike Dahlin. Feres: Flexible and Efficient Replica Synchronization for Diverse Environments. In Submission.

- [12] **Nalini Belaramani**, Jiandan Zheng, Amol Nayate, Robert Soulé, Mike Dahlin, and Robert Grimm. PADS: A Policy Architecture for Distributed Storage Systems. In Submission.

INVITED TALKS AND PRESENTATIONS

- August 2006 “PRACTI Replication — Towards a Universal Theory for Replication”, The University of Hong Kong, Hong Kong.
- August 2006 “PRACTI Replication — Towards a Universal Theory for Replication”, Tata Research, Development and Design Center, Pune, India.

AWARDS

- 2001, 2000 Postgraduate Studentship.
- 1999, 1998, 1997 Dean’s Honors List.
- 1999, 1998, 1997 Joyce M. Kuok Foudation Scholarships.
- 1999, 1998 Sir Edward Youde Scholarships.
- 1999 Hong Kong University Alumni Prize.
- 1999 Williamson Prize.
- 1999 The Chinese Manufacturers’ Association and Donors Scholarships.
- 1998 The Hong Kong Institution of Engineers Prize.
- 1997 Zodiac/Seagate Scholarships.
- 1997 Ho Fook Prize.
- 1997 Chiap Hua Deng’s Foundation Scholarrips.

PROFESSIONAL AFFILIATION

Usenix(2007, 2008), ACM(2007, 2008).

OTHER

- Programming Skills Expert in Java.
Familiar with Shell Scripting, C, C++, HTML, Perl, Python, Visual Basic, SQL.
- Languages Spoken Fluent English, Hindi, Sindhi and Cantonese.
Intermediate Spanish. Beginner French.
- Hobbies Swimming, Dancing, Badminton, Cooking and Reading.