

CURRICULUM VITAE

PRASAD JAYANTI

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EDUCATION

1993	Ph.D., Cornell University	Computer Science
1988	M.S., University of Delaware	Computer Science
1987	M.S., University of Delaware	Mechanical Engineering
1984	B.Tech., Indian Institute of Technology, Madras	Mechanical Engineering

EXPERIENCE

1999-	Associate Professor of Computer Science, Dartmouth College
1993-1999	Assistant Professor of Computer Science, Dartmouth College
1996-97	Visiting Scientist, I.B.M. Thomas J. Watson Research Lab
1990-93	Research Assistant, Cornell University
1992	Instructor (only for Summer), Cornell University
1989	Instructor (only for Summer), University of Delaware

PROFESSIONAL ACTIVITIES

Program Committee Member, *Twenty-first Annual ACM Symposium on Principles of Distributed Computing (PODC)*, Monterey, California, July 20-24, 2002.

Steering Committee Member, *International Symposium on Distributed Computing (DISC)*, 1999-2002.

Program Committee Chair, *Thirteenth International Symposium on Distributed Computing (DISC)*, Bratislava, Slovak Republic, September 27-29, 1999.

Program Committee Member, *Eighteenth Annual ACM Symposium on Principles of Distributed Computing (PODC)*, Atlanta, Georgia, May 4-6, 1999.

Program Committee Member, *Tenth International Workshop on Distributed Algorithms (WDAG)*, Bologna, Italy, October 9-11, 1996.

Program Committee Member, *Ninth International Workshop on Distributed Algorithms (WDAG)*, Le Mont Saint Michel, France, September 13-15, 1995.

Program Committee Member, *Fourteenth Annual ACM Symposium on Principles of Distributed Computing (PODC)*, Ottawa, Canada, August 20-23, 1995.

Reviewed articles for the following journals and conferences: Journal of ACM, ACM Transactions on Computer Systems, SIAM Journal on Computing, Information and Computation, Distributed Computing, Information Processing Letters, Journal of Algorithms, Acta Informatica, PODC, WDAG, DISC, STOC, FOCS, and FSTTCS.

HONORS AND AWARDS

Alfred P. Sloan Research Fellow, 2000-2002.

Nominated by Dartmouth for the *New Hampshire Excellence in Education Award*, 2000.

Dartmouth Distinguished Teacher Award, 1999.

Melville and Leila Strauss 1960 Faculty Fellow, 1999.

Dartmouth College Faculty Fellowship, Winter 1997.

NSF Research Initiation Award, August 1994 - July 1998.

Ph.D. dissertation nominated by Cornell for the *ACM Distinguished Dissertation Award* in 1994.

Excellence in Teaching Award from the Cornell Engineering Co-op Program and the Co-op Honor Society *Mu Sigma Tau*, January 1992.

EXTERNAL RESEARCH SUPPORT

National Science Foundation, "Efficient Wait-Free and Locking Algorithms for Implementing Shared Objects on Modern Multiprocessors," Requested \$338784 for the period 2004-2007, application under review.

Alfred P. Sloan Research Fellowship, \$40000, April 2000 - March 2002.

National Science Foundation, "Efficiently Implementing Wait-Free Shared Objects on Multiprocessors," CCR-9803678, \$186629, August 1998 - July 2002.

National Science Foundation Research Initiation Award, Grant CCR-9410421, "Classifying Shared Objects by their Synchronization Power," \$74939, October 1994 - July 1998.

INTERNAL RESEARCH SUPPORT

Melville and Leila Strauss 1960 Faculty Fellowship, \$2000, July 1999 - June 2000.

Dartmouth College Dean's Venture Fund, \$30000, July 1998 - June 2004.

Dartmouth College Startup Award and Burke Award, \$30000, July 1993 - June 1996.

REFEREED PUBLICATIONS

1. P. Jayanti. Adaptive and Efficient Abortable Mutual Exclusion. In *Proceedings of the 22nd Annual ACM Symposium on Principles of Distributed Computing (PODC)*, July 2003, pages 295-304.
2. P. Jayanti and S. Petrovic. Efficient and Practical Constructions of LL/SC Variables. In *Proceedings of the 22nd Annual ACM Symposium on Principles of Distributed Computing (PODC)*, July 2003, pages 285-294.
3. P. Jayanti, S. Petrovic and K. Y. Tan. Fair Group Mutual Exclusion. In *Proceedings of the 22nd Annual ACM Symposium on Principles of Distributed Computing (PODC)*, July 2003, pages 275-284.
4. T. D. Chandra, V. Hadzilacos, P. Jayanti, and S. Toueg. Generalized Irreducibility of Consensus and the Equivalence of t -Resilient and Wait-Free Implementations of Consensus. Accepted for publication in *SIAM Journal on Computing*.

5. P. Jayanti. f -Arrays: Implementations and Applications. In *Proceedings of the 21st Annual ACM Symposium on Principles of Distributed Computing (PODC)*, July 2002.
6. P. Jayanti, K. Y. Tan, G. Friedland and A. Katz. Bounding Lamport's Bakery Algorithm. In *Proceedings of SOFSEM 2001: the 28th Conference on Current Trends in Theory and Practice of Informatics*, November/December 2001, Lecture Notes in Computer Science 2234, Springer.
7. P. Jayanti, K. Y. Tan and S. Toueg. Time and Space Lower Bounds for Nonblocking Implementations. *SIAM Journal on Computing*, 2000, Volume 30, Number 2, Pages 438-456.
8. P. Jayanti, J. E. Burns, and G. L. Peterson. Almost Optimal Single Reader Single Writer Atomic Register. *Journal of Parallel and Distributed Computing (JPDC)*, 2000, Volume 60, pages 150-168.
9. P. Jayanti, T. D. Chandra, and S. Toueg. The Cost of Graceful Degradation for Omission Failures. *Information Processing Letters (IPL)*, 1999, Volume 71, pages 167-172.
10. P. Jayanti. Solvability of Consensus: Composition Breaks Down for Nondeterministic Types. *SIAM Journal on Computing*, 1998, Volume 28, Number 3, Pages 782-797.
11. P. Jayanti. A Complete and Constant Time Wait-free Implementation of CAS from LL/SC and Vice Versa. In *Proceedings of the 12th International Symposium on Distributed Computing (DISC)*, September 1998, Lecture Notes in Computer Science 1499, Springer.
12. P. Jayanti. A Time Complexity Lower Bound for Randomized Implementations of Some Shared Objects. In *Proceedings of the 17th Annual ACM Symposium on Principles of Distributed Computing (PODC)*, June 1998.
13. P. Jayanti. A Lower Bound on Local Time Complexity of Universal Constructions. In *Proceedings of the 17th Annual ACM Symposium on Principles of Distributed Computing (PODC)*, June 1998.
14. T. D. Chandra, P. Jayanti, and K. Y. Tan. A Polylogarithmic Time Wait-Free Construction for Closed Objects. In *Proceedings of the 17th Annual ACM Symposium on Principles of Distributed Computing (PODC)*, June 1998.
15. P. Jayanti, T. D. Chandra, and S. Toueg. Fault-Tolerant Wait-Free Shared Objects. *Journal of ACM (JACM)*, May 1998, Volume 45, Number 3, pages 451-500.
16. P. Jayanti and S. Khanna. On the Power of Multi-Objects. In *Proceedings of the 11th International Workshop on Distributed Algorithms (WDAG)*, September 1997, Lecture Notes in Computer Science 1320, Springer.
17. P. Jayanti. Robust Wait-Free Hierarchies. *Journal of ACM (JACM)*, July 1997, Volume 44, Number 4, pages 592-614.
18. P. Jayanti, K. Y. Tan, and S. Toueg. Time and Space Lower Bounds for Non-Blocking Implementations. In *Proceedings of the 15th Annual ACM Symposium on Principles of Distributed Computing (PODC)*, May 1996.
19. T. D. Chandra, V. Hadzilacos, P. Jayanti, and S. Toueg. Wait-Freedom vs. t -Resiliency and the Robustness of Wait-Free Hierarchies. In *Proceedings of the 13th Annual ACM Symposium on Principles of Distributed Computing (PODC)*, August 1994.
20. P. Jayanti. On the Robustness of Herlihy's Hierarchy. In *Proceedings of the 12th Annual ACM Symposium on Principles of Distributed Computing (PODC)*, August 1993.
21. P. Jayanti and S. Toueg. Some Results on the Impossibility, Universality, and Decidability of Consensus. In *Proceedings of the 6th International Workshop on Distributed Algorithms (WDAG)*, November 1992, Lecture Notes in Computer Science 647, Springer-Verlag.
22. P. Jayanti, T. D. Chandra, and S. Toueg. Fault-Tolerant Wait-Free Shared Objects. In *Proceedings of the 33rd Annual IEEE Symposium on Foundations of Computer Science (FOCS)*,

October 1992.

23. P. Jayanti, E. L. Lloyd, and A. S. Sethi. Complexity of Concurrent Reading and Writing. In *Proceedings of the 5th International Workshop on Distributed Algorithms (WDAG)*, October 1991, Lecture Notes in Computer Science 579, Springer-Verlag.
24. P. Jayanti and S. Toueg. Wakeup under Read/Write Atomicity. In *Proceedings of the 4th International Workshop on Distributed Algorithms (WDAG)*, September 1990, Lecture Notes in Computer Science 486, Springer-Verlag.

SUBMISSION UNDER REVIEW

1. P. Jayanti. Optimal Multi-writer Snapshot Algorithm. Submitted to *Forty-fifth Annual IEEE Symposium on Foundations of Computer Science (FOCS)* in April 2004.
2. P. Jayanti and S. Petrovic. Towards Efficient Wait-Free Queues and Stacks. Submitted to *Forty-fifth Annual IEEE Symposium on Foundations of Computer Science (FOCS)* in April 2004.
3. P. Jayanti and S. Petrovic. Efficient and Practical Construction of LL/SC Variables. Submitted to a special issue of *Distributed Computing* in December 2003.

INVITED PUBLICATION

1. Wait-Free Computing. In *Proceedings of the 9th International Workshop on Distributed Algorithms (WDAG)*, Le Mont St. Michel, September 1995, Lecture Notes in Computer Science 972, Springer.

INVITED CONFERENCE/WORKSHOP LECTURES

1. Wait-Free Computing. *Sixth Annual Research Day on Global Computing*, Swiss Federal Institute of Technology, Lausanne, Switzerland, July 2002.
2. Generalized Snapshot and the Conflict Exclusion Problem. *Perspectives on Algorithms and Distributed Algorithms*, Center International de Rencontres Mathematiques, Luminy, France, May 21-24, 2001.
3. Generalized Atomic Snapshots. *Workshop on Complexity Issues in Parallel and Distributed Computation*, Fields Institute, Toronto, Canada, June 1998.
4. Wait-Free Computing. *The Ninth Annual International Workshop on Distributed Algorithms*, Le Mont St. Michel, France, September 1995.

RECENT RESEARCH PRESENTATIONS

ACM Symposium on Principles of Distributed Computing, Boston, Massachusetts, July 2003

ACM Symposium on Principles of Distributed Computing, Monterey, California, July 2002

Swiss Federal Institute of Technology, Lausanne, Switzerland, July 2002

Indian Institute of Information Technology, September 2000

Ecole Polytechnique, Paris, October 1999

University of Paris, October 1999

University of Connecticut, March 1999

Ph.D. STUDENTS

Srdjan Petrovic (4th year Ph.D. student, expected to finish in August 2005)

King Y. Tan (finished in 2003). Thesis Title: On the Complexity of Implementing Certain Classes of Shared Objects.

M.S. STUDENTS

Feng Cao (finished in 2003). Thesis Title: Efficient Semi Wait-Free Queue and Stack Algorithms.

Sanjay Khanna (finished in 1997). Thesis Title: On the Power of Multi-Objects.

Ph.D. / M.S. THESIS COMMITTEES

Member of the Ph.D. thesis committees of Perry Fizzano (finished in 1995), Stavros Kolliopoulos (finished in 1998), Robert Savell (current) and Li Shen (current).

Member of the Master's thesis committee of John Thomas (current).

UNDERGRADUATE ADVISING

Honor's Thesis of Rachel Ringel '04 (in progress). Title: Efficient Construction of Multi-word Reader/Writer Variables.

Honor's Thesis of Sam Slee '04 (in progress). Title: Adaptive Long-lived Renaming in Logarithmic Time.

Honor's Thesis of Neha Narula '03. Title: Avoiding Expensive Synchronization Operations in the Absence of Contention.

Honor's Thesis of Kwang-Hyun Baek '02. Title: An Adaptive Priority Mutual Exclusion Algorithm.

Thesis of Maxence Crossley '02. Title: Experimental Evaluation of Mutual Exclusion Algorithms.

Honor's Thesis of Bin Song '96. Title: A Tight Lower Bound for 1-tolerant Self-implementation of Consensus.

Supervised a reading course for Greg Friedland and Amir Katz in Spring 1999, which resulted in a publication on bounding Lamport's Bakery algorithm.

Supervised the research of Bin Song and Oliver Will in the Winter and Spring terms of 1995 under the Dartmouth Presidential Scholarship Program.

GRADUATE COURSES TAUGHT

Theory of Computation (CS 109), Winter 2004, 2003, 2002, 2001, 1999, 1998, 1996, 1995, 1994.

Theory of Distributed Computing (CS 185). Winter 2003; Fall 2001; Winter 2000, 1998; Spring 1994.

UNDERGRADUATE COURSES TAUGHT

Algorithms (CS 25). Spring 2004; Summer 1996.

Theory of Computation (CS 49). Fall 2003, 2002, 2001, 1998, 1995; Summer 1992 (at Cornell University).

Theory of Distributed Computing (CS 85). Winter 2003; Fall 2001; Winter 2000, 1998; Spring 1994.

Introduction to Computer Science (CS 5). Spring 2001.

Concepts in Computing (CS 4). Winter 2001.

Data Structures and Programming (CS 15). Winter 2000, 1999, 1995; Fall 1993.

Discrete Math (CS 21). Winter 2000 (Co-taught with Professor Shemanske).

Computer Architecture (CS 37). Summer 1999; Spring 1998, 1996, 1995.

Introduction to Programming. Summer 1989 (at University of Delaware).

COURSE DEVELOPMENT

Changed the assembly language and the text for the undergraduate course on Computer Architecture (CS 37) in Spring 1996.

Developed the undergraduate and graduate seminar (CS 85/185) on distributed computing. Emphasized message passing algorithms in Spring 1994 and shared memory algorithms in 1998, 2000 and 2001.

COLLEGE COMMITTEES

On the Alternate Faculty Pool of Committee on Standards, 2001-03.

Member, Committee on Standards, Winter and Spring 2001.

Member, Committee on Standards, Fall 1999 and Spring 2000.

Member, Committee on Instruction, Winter 1996.

DEPARTMENTAL COMMITTEES

Adviser to Ph.D. Program, 2001-04, 2000-01 (except Fall), 1999-00 (Summer and Spring), 1998-99, 1995-96.

Chair, Ph.D. Admissions Committee, 2003-04, 1997-98.

Chair, M.S. Admissions Committee, 2002-03 and 1999-2000.

Member, Faculty Recruiting Committee, 2001-02, 2000-2001.

Member, Ph.D. Admissions Committee, 1995-96, 1994-95, 1993-94.

Member, Master's Admissions Committee, 2001-02, 2000-2001.

Adviser to M.S. Program, 1999-2000 (Winter and Spring)

Chair, Colloquium Organization Committee, 1994-95.

Member, Undergraduate Program Committee, 1994-95.

Member, Kemeny Computing Contest Panel, 1993-94.

SUPPORTING DIVERSITY AT DARTMOUTH

1. Performed (with Aparna Jayanti) Hindu Prayer at *Dartmouth College's Annual Celebration of Martin Luther King, Jr.*, January 19, 2004.
2. Spoke on *Non-violence in Hinduism* at *Dartmouth College's Annual Celebration of Martin Luther King, Jr.*, January 18, 2004.
3. Served on the faculty panel for the orientation of the incoming first-year international students of the class of 2007, organized by Dartmouth College International Office, July 2003.
4. Served as a member on the panel *Professors of Faith* organized by Tucker Foundation, November 14, 2002. I spoke about and represented Hinduism.
5. Faculty Advisor to *Shanti*, the Hindu Student Group at Dartmouth College, from its recognition in December 2002 to present.
6. Worked with students to form and get recognition for *Shanti*, the Hindu Student Group at Dartmouth College. (The group was recognized by Dartmouth's Office of Religious and Spiritual Life in December 2002.)
7. Served on the Kosher-Halal-Sakahara committee to include the Sakahara (vegetarian) option at the Pavilion, the college's new dining hall, 2001-02.