

William N. Scherer III

Curriculum vitæ

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PERSONAL DATA

Year of Birth: 1971
Place of Birth: Baltimore, Maryland, USA
Citizenship: USA
Married, two children

EDUCATION

Ph.D. in Computer Science: University of Rochester, Rochester, NY
March 2006
Advisor: Michael L. Scott
M.S. in Computer Science: University of Rochester, Rochester, NY
March 2002
Advisor: Michael L. Scott
B.A. in Computer Science: Carleton College, Northfield, MN
June 1993
Advisor: Richard W. Nau

EMPLOYMENT HISTORY

March 2003-Present: Postdoc at the University of Rochester
Supported by a grant from Sun Microsystems
Fall 2002-March 2003: Research Assistant at the University of Rochester
Supported by grants from Sun Microsystems and NSF
Summer 2002: Intern, Scalable Synchronization Research Group
Sun Microsystems, Burlington, MA
Fall 2001-Spring 2002: Teaching Assistant at the University of Rochester
Supported by a federal GAANN fellowship
Summer 2001: Research Assistant at the University of Rochester
Supported by a DARPA grant
1994-2000: Advanced Development Engineer (Consultant)
Vanteon Corporation, Rochester, NY

PUBLICATIONS

1. T. Bai, X. Shen, C. Zhang, W. N. Scherer III, C. Ding, and M. L. Scott. A Key-Based Adaptive Transactional Memory Executor. Technical Report 909, Computer Science Department, University of Rochester, Dec. 2006.
2. M. F. Spear, V. J. Marathe, W. N. Scherer III, and M. L. Scott. Conflict Detection and Validation Strategies for Software Transactional Memory. In *20th Intl. Symp. on DIStributed Computing (DISC 2006)*, Stockholm, Sweden, Sept. 2006.

3. V. J. Marathe, M. F. Spear, C. Heriot, A. Acharya, D. Eisenstat, W. N. Scherer III, and M. L. Scott. Lowering the Overhead of Nonblocking Software Transactional Memory. In *First ACM SIGPLAN Workshop on Languages, Compilers, and Hardware Support for Transactional Computing* (TRANSACT 2006), Ottawa, Canada, June 2006. An expanded version appears as Technical Report URCS-TR893, Department of Computer Science, University of Rochester, March 2006.
4. A. Shriraman, V. J. Marathe, S. Dwarkadas, M. L. Scott, D. Eisenstat, C. Heriot, W. N. Scherer III, and M. F. Spear. Hardware Acceleration of Software Transactional Memory. In *First ACM SIGPLAN Workshop on Languages, Compilers, and Hardware Support for Transactional Computing* (TRANSACT 2006), Ottawa, Canada, June 2006. An expanded version appears as Technical Report URCS-TR887, Department of Computer Science, University of Rochester, March 2006.
5. W. N. Scherer III, D. Lea, and M. L. Scott. Scalable Synchronous Queues. **Winner: Best Student Paper Award.** In *11th ACM Symposium on Principles and Practice of Parallel Programming* (PPoPP 2006), Manhattan, NY, March 2006.
6. S. Heller, M. Herlihy, V. Luchangco, M. Moir, N. Shavit, and W. N. Scherer III. A Lazy Concurrent List-Based Set Algorithm. In *9th International Conference of Principles of Distributed Systems* (OPODIS 2005), Pisa, Italy, December 2005.
7. W. N. Scherer III, D. Lea, and M. L. Scott. A Scalable Elimination-based Exchange Channel. In *OOPSLA Workshop on Synchronization and Concurrency in Object Oriented Languages* (SCOOOL 2005) held in conjunction with the *20th ACM Symp. on Object-Oriented Programming, Systems, Languages and Applications* (OOPSLA 2005), San Diego, CA, October 2005.
8. V. J. Marathe, W. N. Scherer III, and M. L. Scott. Adaptive Software Transactional Memory. In *18th Annual Conference on Distributed Computing* (DISC 2005), Cracow, Poland, September, 2005. An earlier version appears as Technical Report URCS-TR868, Department of Computer Science, University of Rochester, May 2005.
9. B. He, W. N. Scherer III, and M. L. Scott. Preemption Adaptivity in Time-Published Queue-Based Spin Locks. In *12th Annual IEEE International Conference on High Performance Computing* (HiPC 2005), Goa, India, December 2005. **Winner: Best Paper Award.** An earlier version appears as Technical Report URCS-TR867, Department of Computer Science, University of Rochester, May 2005.
10. W. N. Scherer III and M. L. Scott. Advanced Contention Management for Dynamic Software Transactional Memory. In *24th ACM Symposium on Principles of Distributed Computing* (PODC 2005), Las Vegas, NV, July 2005.
11. W. N. Scherer III and M. L. Scott. Randomization in STM Contention Management (poster paper; **winner: Most Popular Poster Presentation Award**). In *24th ACM Symposium on Principles of Distributed Computing* (PODC 2005), Las Vegas, NV, July 2005.
12. V. J. Marathe, W. N. Scherer III, and M. L. Scott. Design Tradeoffs in Modern Software Transactional Memory Systems. In *7th Workshop on Languages, Compilers, and Run-time Support for Scalable Systems* (LCR 2004), Houston, TX, October 2004.
13. W. N. Scherer III and M. L. Scott. Nonblocking Concurrent Objects with Condition Synchronization. In *18th Annual Conference on Distributed Computing* (DISC 2004), Amsterdam, The Netherlands, October 2004.

14. W. N. Scherer III and M. L. Scott. Contention Management in Dynamic Software Transactional Memory. In *PODC Workshop on Concurrency and Synchronization in Java Programs (CSJP 2004)* held with the *23rd ACM Symposium on Principles of Distributed Computing (PODC 2004)*, St. Johns, NL, Canada, July 2004.
15. M. P. Herlihy, V. Luchangco, M. Moir, and W. N. Scherer III. Software Transactional Memory for Supporting Dynamic-Sized Data Structures. In *22nd ACM Symposium on Principles of Distributed Computing (PODC 2003)*, Boston, MA, July 2003.
16. M. L. Scott and W. N. Scherer III. Scalable Queue-Based Spin Locks with Timeout. In *8th ACM Symposium on Principles and Practice of Parallel Programming (PPoPP 2001)*, Snowbird, UT, June 2001.

PRESENTATIONS AND INVITED TALKS

1. High-performance Multithreaded Producer-consumer Designs – from Theory to Practice. Copresented with Doug Lea. Rochester Java Users Group, Rochester, NY, April 2006.
2. Scalable Synchronous Queues. *11th ACM Symposium on Principles and Practice of Parallel Programming (PPoPP 2006)*, Manhattan, NY, March 2006.
3. A Scalable Elimination-based Exchange Channel. *OOPSLA Workshop on Synchronization and Concurrency in Object Oriented Languages (SCOOOL 2005)*, San Diego, CA, October 2005.
4. Advanced Contention Management for Dynamic Software Transactional Memory. *24th ACM Symposium on Principles of Distributed Computing (PODC 2005)*, Las Vegas, NV, July 2005.
5. Nonblocking Concurrent Data Structures with Condition Synchronization. Microsoft Research, Cambridge, England, UK, October 2004.
6. Nonblocking Concurrent Objects with Condition Synchronization. *18th Annual Conference on Distributed Computing (DISC 2004)*, Amsterdam, The Netherlands, October 2004.
7. Contention Management in Dynamic Software Transactional Memory. *PODC Workshop on Concurrency and Synchronization in Java Programs (CSJP 2004)*, St. Johns, NL, Canada, July 2004.
8. Practical Issues for Working with Obstruction-Free Software Transactional Memory. *Scalable Synchronization Research Summit*, Sun Microsystems, Burlington, MA, August 2002.

GRANTS

1. Primary author of a successful proposal to the Pittsburgh Supercomputer Center, Nov. 2000 (500 units of access to Cray T3E machine).
2. Assisted in writing a successful proposal to the National Science Foundation, Nov. 2001 (3-year award, \$253,000).

PATENT

1. One US patent pending. Filed September 2003.

DEPARTMENT SERVICE (Rochester)

1. Fall 2004–Summer 2005: Elected by peers to serve as departmental graduate student Representative to faculty. Participated in faculty meetings and acted as liaison to students.
2. Fall 2003–Spring 2004: Student representative for faculty recruitment. Interviewed candidates, organized candidate–student meetings, and represented student voice in faculty discussions.
3. Fall 2003–Spring 2004: Student Representative for laboratory committee; influenced updates to equipment and facilities.
4. Springs 2001–2005: Participated in graduate student recruitment, reviewing dossiers and interviewing candidates during prospective student weekend.
5. Springs 2002–2006: Assisted in development of Comprehensive Examination, qualifier for M.S.—Ph.D. transition.

PROFESSIONAL ACTIVITIES

1. Named as one of seven full members of the Java Community Process Expert Group on Concurrency (formerly JSR 166), July 2005.
2. Reviewer for journals, conferences, and workshops including: TOCS, JPDC, Distributed Computing, ISPASS 2006, PPOPP 2006-2007, SC 2005, MICRO 2005, SCOOOL 2005, PLDI 2005-2006, PODC 2005-2006, ICPP 2004, IPDPS 2004, ICDCS 2003

RESEARCH INTERESTS

I am interested in issues related to synchronization and correctness in parallel and multi-threaded applications. This interest spans both software engineering and algorithmic issues, and leads to questions such as the following:

- How can we make multi-threaded software easier for programmers to write and verify?
- How can we improve performance, fairness, robustness, or other desirable properties in systems through development of new synchronization algorithms?
- How can we adapt synchronization algorithms to exploit opportunities presented by new hardware technologies?
- How can we adapt synchronization algorithms for use in high-performance supercomputing applications?