

SCOTT M. PIKE

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Research Interests ♦ Distributed systems, software engineering, fault tolerance, stabilization, concurrency, dynamic reconfiguration, modular composition mechanisms, theory of distributed computing.

Education ♦ **Doctor of Philosophy**, 2004
Department of Computer Science & Engineering (CSE)
The Ohio State University, Columbus, OH, USA
Dissertation: *Fault-Localization in Distributed Resource Allocation*
Advisors: Paolo A.G. Sivilotti and Bruce W. Weide

♦ **Master of Science**, 2000
Department of Computer Science & Engineering (CSE)
The Ohio State University, Columbus, OH, USA

♦ **Bachelor of Arts**, 1996
Department of Philosophy
Yale University, New Haven, CT, USA

Research Awards & Honors ♦ **ICDCS 2004 Best Paper Award** for “Dining Philosophers with Crash Locality 1”
· 24th Int’l Conference on Distributed Computing Systems (1st place of 475 papers).

♦ **Third Place Finalist**, ACM International Graduate Research Competition, 2001.
· Thesis: “A Distributed Resource-Allocation Algorithm with Failure Locality 1”

♦ **Doctoral Symposium Invitee and Presenter** at OOPSLA 2002.
· Thesis: “Encapsulating Concurrency with Early-Reply”

Teaching Awards ♦ **Graduate Associate Teaching Award**, Ohio State University, 2003-04.
· Ohio State’s highest recognition for exceptional graduate student teaching.
· Awarded to only 10 out of 3000+ annual graduate instructors at Ohio State.

♦ **Eleanor Quinlan Memorial Award**, Ohio State University, 2003-04.
· Outstanding graduate teaching award of the CSE department at Ohio State.

Service Awards ♦ **Outstanding Graduate Student Award**, 43rd Annual Leadership Awards, 2003-04.
· Among the highest awards conferred on graduate students at Ohio State University.
· Recognizes outstanding contributions in the areas of leadership, scholarship, and service.

♦ **Distinguished Service Award**, CSE Department at Ohio State University, 2001–02.
· Recognized for leadership, excellence, and dedication to departmental service.

Refereed Publications ♦ **Dining Philosophers with Crash Locality 1** (Best Paper Award: 1st/475)
Scott M. Pike and Paolo A.G. Sivilotti
24th IEEE International Conference on Distributed Computing Systems
ICDCS 2004, pages 22–29.

♦ **Dynamic Module Replacement in Distributed Protocols**
Nigamanth Sridhar, Scott M. Pike, and Bruce W. Weide
23rd IEEE International Conference on Distributed Computing Systems
ICDCS 2003, pages 620–627.

- ◆ **Encapsulating Concurrency with Early-Reply**
 Scott M. Pike
17th ACM Object-Oriented Programming, Systems, Languages, and Applications
 OOPSLA 2002 Companion, Doctoral Symposium, pages 18–19.
- ◆ **Early-Reply Components: Concurrent Execution with Sequential Reasoning**
 Scott M. Pike and Nigamanth Sridhar
7th International Conference on Software Reuse
 ICSR7 – *Software Reuse: Methods, Techniques, and Tools*
 LNCS 2319, pages 46–61, Springer-Verlag, 2002.
- ◆ **Iterators Reconsidered**
 Jason O. Hallstrom, Scott M. Pike, and Nigamanth Sridhar
5th ICSE Workshop on Component-Based Software Engineering (2002)
 In conjunction with the *24th International Conference on Software Engineering*.
- ◆ **Binary Trees: A Challenge Problem for Separating Concerns**
 Scott M. Pike
4th Workshop on Advanced Separation of Concerns in Software Engineering (2001)
 In conjunction with the *23rd International Conference on Software Engineering*.
- ◆ **Toward a Normative Theory for Component-Based System Design and Analysis**
 David S. Gibson, Bruce W. Weide, Scott M. Pike, and Stephen H. Edwards
 In *Foundations of Component-Based Systems*, Gary Leavens and Murali Sitaraman, eds.
 Chapter 10, pages 211–230. Cambridge University Press, 2000.
- ◆ **A New Distributed Resource-Allocation Algorithm with Optimal Failure Locality**
 Paolo A.G. Sivilotti, Scott M. Pike, and Nigamanth Sridhar
12th IASTED International Conference on Parallel and Distributed Computing and Systems
 PDCS 2000, vol.2, pages 524–529, IASTED/ACTA Press, 2000.
- ◆ **Checkmate: Cornering C++ Dynamic Memory Errors with Checked Pointers**
 Scott M. Pike, Bruce W. Weide, and Joseph E. Hollingsworth
31st ACM Technical Symposium on Computer Science Education
 SIGCSE 2000, pages 352–356.
- ◆ **Reasoning about Software-Component Behavior**
 Murali Sitaraman, Steven Atkinson, Gregory Kulczycki, Bruce W. Weide, Timothy J. Long,
 Paolo Bucci, Wayne D. Heym, Scott M. Pike, and Joseph E. Hollingsworth
6th International Conference on Software Reuse
 ICSR6 – *Software Reuse: Advances in Software Reusability*
 LNCS 1844, pages 266–283, Springer-Verlag, 2000.

- Unrefereed Publications**
- ◆ **A Pattern-Oriented Approach to Dynamic Module Replacement**
 Nigamanth Sridhar, Scott M. Pike, and Bruce W. Weide
 Technical Report OSU-CISRC-7/02-TR17, CIS, Ohio State, July 2002.
 - ◆ **Why Swapping?**
 Bruce W. Weide, Scott M. Pike, and Wayne D. Heym
Proceedings of the RESOLVE Workshop 2002
 Technical Report TR-02-11, Computer Science, Virginia Tech, June 2002.
 - ◆ **Early-Reply: A Basis for Pipebranching Parallelism with Sequential Reasoning**
 Scott M. Pike and Nigamanth Sridhar
 Technical Report OSU-CISRC-10/01-TR13, CIS, Ohio State, Jan 2001.

- Conference Presentations**
- ◆ **Dining Philosophers with Crash Locality 1**
24th IEEE International Conference on Distributed Computing Systems
 ICDCS, March 24, 2004. Tokyo, Japan.

- ◆ **Encapsulating Concurrency with Early-Reply**
17th ACM Object-Oriented Programming, Systems, Languages, and Applications
OOPSLA Doctoral Symposium, November 5, 2002. Seattle, Washington USA.
 - ◆ **Early-Reply Components: Concurrent Execution with Sequential Reasoning**
7th International Conference on Software Reuse
ICSR-7, April 15, 2002. Austin, Texas USA.
 - ◆ **A Distributed Resource-Allocation Algorithm with Failure Locality 1**
9th ACM International Graduate Student Research Competition – Third Place Finalist
February 22(*Poster Session*) & 23(*Research Defense*), 2001. Charlotte, North Carolina USA.
 - ◆ **A New Distributed Resource-Allocation Algorithm with Optimal Failure Locality**
12th IASTED International Conference on Parallel and Distributed Computing and Systems
PDCS, November 8, 2000. Las Vegas, Nevada USA.
 - ◆ **Checkmate: Cornering C++ Dynamic Memory Errors with Checked Pointers**
31st ACM Technical Symposium on Computer Science Education
SIGCSE, March 12, 2000. Austin, Texas USA.
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Additional Conferences Attended

- ◆ *23rd International Conference on Software Engineering*
ICSE, May 16–18, 2001. Toronto, Ontario Canada.
 - ◆ *ACM1: Beyond Cyberspace — A Journey of Many Directions*
ACM Quadrennial Conference, March 10–14, 2001. San Jose, California USA.
 - ◆ *Informatics — 10 Years Back, 10 Years Ahead*
10th Anniversary Conference of Schloss Dagstuhl
August 27–31, 2000. Dagstuhl, Saarbrücken Germany.
 - ◆ *6th International Conference on Software Reuse*
ICSR-6, June 27–29, 2000. Vienna, Austria.
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Research Experience

- ◆ **Co-authored federal and industrial grants:** NSF-ITR, AFRL, Ameritech.
 - ◆ **Created new techniques for fault-localization using failure detection oracles**
 - Proved impossibility and optimality results for oracle-based crash tolerance.
 - Created optimal algorithms that dominate existing approaches to fault containment.
 - ◆ **Formulated Early-Reply as a concurrency construct with sequential reasoning**
 - Outlined operational semantics, proof obligations, and performance metrics.
 - Investigated applications to pre-fetching, amortization, and client-server computing.
 - ◆ **Developed techniques for late-binding and dynamic software reconfiguration**
 - Designed a distributed architecture for run-time instantiation of C++ templates.
 - Designed a pattern-based approach to dynamic module substitution in Java and C#.
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Funding Record

- ◆ \$800 travel grant to present at ICDCS, Mar 2004.
 - Funded by the IEEE Technical Committee on Distributed Processing.
- ◆ \$1200 ACM honorarium to present at the OOPSLA Doctoral Symposium, Nov 2002.
- ◆ \$500 from the Ohio State Council of Graduate Students to present at ICSR-7, Apr 2002.
- ◆ \$700 ACM travel grant to receive research award at the ACM annual banquet, Mar 2001.
- ◆ \$365 ACM travel stipend to compete in the ACM Graduate Research Competition, Feb 2001.
- ◆ \$400 from the Ohio State Council of Graduate Students to present at PDCS, Nov 2000.
- ◆ Three years of RA funding (Sept 2000–Aug 2002). Part of a \$499,809 NSF-ITR grant that I helped co-author: *Principles of Distributed Component-Based Software*, CCR-0081596.

Teaching Experience
◆ Teaching Awards:

- **Graduate Associate Teaching Award**, Ohio State University, 2003-04.
 - Ohio State's highest recognition for exceptional graduate student teaching.
- **Eleanor Quinlan Memorial Award**, Ohio State University, 2003-04.
 - Outstanding graduate teaching award of the CSE department at Ohio State.

◆ Teacher Education and Curriculum Development:

- Co-designed and led TA training seminars: *Encouraging Class Involvement*, Jan 2004.
- Helped conceive, design, and implement a client-server architecture and educational materials for a new software engineering course (CSE 321, Summer 1999).

◆ Graduate Teaching Associate:

- Course instructor for CSE 222: *Development of Software Components*
- Delivered all lectures; coordinated and conducted programming labs.
- Co-developed, administered, and graded midterms and final exams.
- Managed undergraduate grader responsible for homeworks and labs.
- Experience: Spring-98, Spring-00, Spring-03, Summer-03, Autumn-03, Winter-04.

◆ Graduate Teaching Assistant:

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| · Graded courses in computation theory | Quarter-Year |
| · CSE 625: Automata and Formal Languages | Spring-1999 |
| · CSE 725: Computability and Unsolvability | Winter-2000 |
| · CSE 727: Advanced Computational Complexity | Spring-2000 |

◆ Research Advising and Mentoring

- Advised students in the Undergraduate Research Opportunities Program (EUROPA)
 - Sarah Waterson: Implemented animations of classic sorting algorithms.
 - Jill O'Donnell: Developed a simulation harness for dining algorithms.
 - Daniel Galron: Simulated expected failure locality of dining algorithms.
 - Kelli Webb: Investigated the Salishan parallel programming problems.
- Co-designed a graduate seminar: *Case Studies in Software Modularity* (Autumn 2002)
 - Advised graduate students working on research topics from my thesis.
 - Olga Volgin: Investigated the impact of Early-Reply on GUI response time.
 - Chris Bohn: Compared Early-Reply to the KWIC-index system of Parnas.
 - White paper: *Evaluating the Performance of Early-Reply Applications*

Service Activities
◆ Founded and Chaired the CSE Graduate Steering Committee: 2000–2003

- Spearheaded an umbrella group to organize and represent graduate interests.
- Conducted elections for representatives to sit on departmental committees.
- Coordinated departmental interests in student recruiting, visitations, etc.
- Acted as a liaison between graduate students and faculty contacts.

◆ Served as graduate representative to various CSE committees:

- Curriculum Committee: 1998–2000.
- Graduate Studies Committee: 1999–2000.
- Faculty Search Committee: 2000–2002.
- Faculty Meetings: 2002–2003.

◆ **Refereed various conferences and journals:**

- Journal of Information Science and Engineering (JISE-2004).
- 17th Conference on Software Engineering Education and Training – CSEET 2004.
- 7th International Conference on Principles of Distributed Systems – OPODIS 2003.
- 23rd International Conference on Distributed Computing Systems – ICDCS 2003.
- 25th International Conference on Software Engineering – ICSE 2003.
- 34th Hawaiian International Conference on System Sciences – HICSS 2001.
- Software: Practice & Experience (SP&E-2001).

◆ **Staff Writer** for the award-winning ICSE 2001 newsletter WOW: “Window on the World”

**Personal
Details**

- ◆ I am a United States citizen born on February 27, 1974.
 - ◆ My Erdős Number is 4: P. Erdős → D. Kleitman → M. Fredman → B. Weide → S. Pike.
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References

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