
Kim Kihlstrom

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Education

B.S., Electrical Engineering June 1979
Stanford University

M.S., Electrical Engineering June 1993
Stanford University

Ph.D., Computer Engineering August 1999
University of California, Santa Barbara
Research field: Survivability, Security and Fault Tolerance in Distributed Systems
Committee: Louise Moser, Michael Melliar-Smith, Steven Butner, Michael Reiter

Professional Experience

Associate Professor, Computer Science 2005-present
Assistant Professor, Computer Science 1999-2005
Westmont College, Santa Barbara, CA

Teaching: I participate in curriculum development, hold lectures and laboratory sessions, develop online materials, supervise teaching assistants, and write and grade exams. I have a passion for education at all levels. I enjoy teaching and interacting with students, as well as reading about and reflecting on educational philosophies and strategies. I have a keen interest in curriculum development, and am active in exploring the effective use of technology in the classroom

Research: The objective of my research is to design survivable distributed systems that are able to provide useful services despite malicious intrusions that subvert one or more processors, and despite faults or accidents that damage some portion of the system. Projects that I have worked on include the SecureRing group communication system, a secure auction service, the Immune system, and Byzantine fault detectors. I am currently working in collaboration with Professor Priya Narasimhan of Carnegie Mellon University on the design of a new system called Starfish that will provide survivability to middleware systems

Graduate Student Researcher 1995–1999
ECE Department, University of California, Santa Barbara, CA

My thesis work included the design and implementation of the SecureRing group communication system. The system provides reliable totally ordered message delivery and group membership services that continue to operate correctly despite malicious attack from within the system. I also collaborated on the design of the Immune system, which provides survivability to CORBA applications transparently, enabling them to continue to operate despite intrusions, accidents or faults. Additionally, I did foundational work in the area of malicious (Byzantine) fault detectors

Instructor, Engineering-Physics 1984–1992; 1993–1994; 1996
Westmont College, Santa Barbara, CA
Held lectures and laboratory sessions, supervised teaching assistants, developed new curricula for several courses, assisted in the development of several textbooks, wrote assignments and solutions, and wrote and graded exams

Teaching Assistant 1992–1993
Stanford University, Stanford, CA
Taught circuits laboratory, held office hours, wrote assignments and solutions, and wrote and graded exams

Development Engineer 1979–1981
Hewlett Packard Company, Palo Alto, CA
Designed microwave amplifiers and pulse modulators used in 2.0–6.5 GHz and 6.0–12.5 GHz signal generators. Supervised transfer of units to production

Summer Intern Summers 1975, 1976, 1977, 1978
Hewlett Packard Company, Santa Rosa, CA
Developed computer modeling programs for device fabrication processes and microwave devices, did wiring and assembly of electronic instruments, worked on computer data base system, and performed technical data correlation and microwave transistor evaluation

Awards

Bruce and Adaline Bare Teacher of the Year Award
Natural and Behavioral Sciences, Westmont College, 2003-2004

Faculty Research Award
Westmont College, 2003-2004

Wilkes Award
Best paper published in a volume (year) of *The Computer Journal*, 2004

Principal Investigator, National Science Foundation Grant
Computer Science, Engineering, and Mathematics Scholarships Program (CSEMS), \$55,000, April 2002-March 2006

Phi Kappa Phi Honor Society
Inducted 2003

University of California Doctoral Scholar Fellowship
Awarded by University of California, Santa Barbara for four years of doctoral study, 1994

Courses Taught

Fundamentals of Computing
Introduction to Computer Science I
Introduction to Computer Science II
Computer Organization and Architecture
Networks
Data Structures and Algorithms
Programming Languages
Distributed Systems
Operating Systems
Circuits and Electronics
Circuits and Electronics Laboratory
General Physics Laboratory (for engineering and physics majors)
Physics Laboratory (for life science majors)

Professional Service

Technical Committees: IASTED Technical Committee on Parallel and Distributed Computing and Systems (2001-2004)

Program Committees: International Program Committee, Seventeenth IASTED International Conference on Parallel and Distributed Computing and Systems, Phoenix, Arizona, November 2005; International Program Committee, Sixteenth IASTED International Conference on Parallel and Distributed Computing and Systems, MIT, Cambridge, November 2004; International Program Committee, Fifteenth IASTED International Conference on Parallel and Distributed Computing and Systems, Marina del Rey, California, November 2003

Session Chair: ACM Technical Symposium on Computer Science Education, Norfolk, Virginia, March 2004; Fifteenth IASTED International Conference on Parallel and Distributed Computing and Systems, Marina del Rey, California, November 2003; ACM Technical Symposium on Computer Science Education, Reno, Nevada, February 2003; Thirteenth IASTED International Conference on Parallel and Distributed Computing and Systems, Anaheim, California, August 2001, ACM Technical Symposium on Computer Science Education, Charlotte, North Carolina, February 2001

External Referee: *IEEE Transactions on Computers*, *Journal of Parallel and Distributed Systems*, *IEEE Internet Computing*, *ACM Symposium on Principles of Distributed Computing*, *International Symposium on Distributed Computing*, *IEEE Symposium on Reliable Distributed Systems*, *Journal of Theoretical Computer Science*, *IEEE Communications Letters*

Memberships: Association for Computing Machinery (ACM) and ACM Special Interest Group on Computer Science Education (SIGCSE); Institute of Electrical and Electronics Engineers (IEEE) and IEEE Computer Society; Association of Christians in the Mathematical Sciences; Working Group on Integrating Mathematical Reasoning into Computer Science Curricula

Publications

Research Publications:

K. P. Kihlstrom, P. Narasimhan, C. Phillips, C. Ritchey, and B. LaBarbera, "The Architecture of the Starfish System: Mapping the Survivability Space," in *Proceedings of the IASTED International Conference on Parallel and Distributed Computing and Systems*, Marina del Rey, California, November 2003, pp. 833-843

K. P. Kihlstrom and P. Narasimhan, "The Starfish System: Providing Intrusion Detection and Intrusion Tolerance for Middleware Systems," in *Proceedings of the IEEE Workshop on Object-Oriented Real-Time Dependable Systems (WORDS)* (invited for presentation), Guadalajara, Mexico, January 2003, pp. 191-199

K. P. Kihlstrom, L. E. Moser and P. M. Melliar-Smith, "Byzantine Fault Detectors for Solving Consensus," *The Computer Journal* 46(1):16-35, 2003 (received Wilkes award for best paper published in volume)

K. P. Kihlstrom, L. E. Moser, and P. M. Melliar-Smith, "The SecureRing Group Communication System," *ACM Transactions on Information and System Security* 4(4):371-406, November 2001

K. P. Kihlstrom, N. Narasimhan, L. E. Moser and P. M. Melliar-Smith, "A Secure Auction Service," in *Proceedings of the IASTED International Conference on Parallel and Distributed Computing and Systems*, Anaheim, California, August 2001, pp. 599-604

K. P. Kihlstrom, *Survivable Distributed Systems: Design and Implementation*, Ph.D. Dissertation, Department of Electrical and Computer Engineering, University of California, Santa Barbara, Technical Report 99-19, August 1999

P. Narasimhan, K. P. Kihlstrom, L. E. Moser and P. M. Melliar-Smith, "Providing Support for Survivable CORBA Applications with the Immune System," in *Proceedings of the 19th IEEE International Conference on Distributed Computing Systems*, Austin, Texas, May 1999, pp. 507-516

K. P. Kihlstrom, L. E. Moser and P. M. Melliar-Smith, "The SecureRing Protocols for Securing Group Communication," in *Proceedings of the 31st IEEE Hawaii International Conference on System Sciences*, Kona, Hawaii, January 1998, vol. 3, pp. 317-326

K. P. Kihlstrom, L. E. Moser and P. M. Melliar-Smith, "Solving Consensus in a Byzantine Environment Using an Unreliable Fault Detector," in *Proceedings of the International Conference on Principles of Distributed Systems*, Chantilly, France, December 1997, pp. 61-75

K. Berket, R. K. Budhia, K. P. Kihlstrom, *et al.*, "On Technologies in Computer Networks and Distributed Systems," *looking.forward* supplement to *IEEE Computer*, 4(3), Fall 1997

K. P. Kihlstrom, "Microwave Solid-State Amplifiers and Modulators for Broadband Signal Generators," *Hewlett Packard Journal: Technical Information from the Laboratories of Hewlett-Packard Company*, 33(7):30-31, July 1982

Teaching Publications:

K. P. Kihlstrom, "Asserting CS != Can't Socialize: Building Community in a Computer Science Program," in *Proceedings of the ACMS Biennial Conference*, Huntington, IN, June 2005, to appear

K. P. Kihlstrom, "Men Are From The Server Side, Women Are From The Client Side: A Biblical Perspective On Men, Women, and Computer Science," in *Proceedings of the ACMS Biennial Conference*, San Diego, CA, May 2003, pp. 126-137

P. B. Henderson, V. Almstrum, P. De Palma, O. Hazzen, and K. P. Kihlstrom, "Women, Mathematics and Computer Science," (panel discussion), in *Proceedings of the 33rd ACM Technical Symposium on Computer Science Education*, February 2002, pp. 131-132

R. J. Smith, A. M. Fauchet, H. Fong, D. Hayes and K. Kihlstrom, *Electronics: Circuits and Devices - Instructor's Manual*, John Wiley and Sons, 1987