Contact Information

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Research Interests

My research interests span the area of computer systems with a focus on networking. They include distributed systems; programming languages, compilation and mobile code; and operating systems.

Teaching Interests

Courses on computer systems at all levels, particularly graduate level networking and programming languages at the undergraduate level. Recent courses I have taught are: Introduction to Computer Communication Networks (461, Spring 2000), Research in Networks and Distributed Systems (590DW, Autumn 1999), and Computer Systems (6.033 at MIT; Recitation Instructor, Spring 1996).

Education

Massachusetts Institute of Technology
Ph.D. in Computer Science, 10/98
Thesis: *Service Introduction in an Active Network*
Supervisors: Prof. John Guttag and Dr. David Tennenhouse

Master of Science in Computer Science, 9/94
Electrical Engineers degree, 2/95
Thesis: *An Interactive Programming System for Media Computation*
Supervisor: Prof. David Tennenhouse

University of Western Australia (Perth, Australia)
Bachelor of Engineering in Electrical Engineering (1st class Honors), 2/89

Professional Experience

University of Washington
Assistant Professor, Department of Computer Science and Engineering, 6/99-present
Since starting at UW, I have pursued two new research directions as well as continuing to build and experiment with extensible distributed systems: protocol design without trust, and self-organizing distributed systems. With the growth of the Internet, it is increasingly important to be able to interact with remote parties without trusting them. Doing so requires protocols to be designed in unconventional ways. With the rapid pace of change, new systems such as overlays must be deployed automatically and adapt to changing conditions. This is possible with the use of self-organization techniques.

Massachusetts Institute of Technology
Research Assistant, Software Devices and Systems Group, 9/94-present
My doctoral research studied the use of mobile code technologies to ease the introduction of new network services. Through experimentation with a series of prototypes, I designed a dynamically extensible network architecture called ANTS. ANTS

has provided evidence that it is possible to build "active" networks, and has been widely used by the networking research community.

Research Assistant, Telemedia Networks and Systems Group, 9/91-9/94
I was one of the major contributors to the design and development of the ViewStation distributed multimedia environment. I constructed an interactive programming environment that controlled networked video processing applications via multiple representations as they ran.

QPSX Communications, 2/89 to 8/91
I worked for QPSX during the formative time that they led the development of the IEEE 802.6 (DQDB) switching technology. I designed network components and produced specifications for hardware and software teams.

Publications

Refereed Journals

S. Savage, N. Cardwell, D. Wetherall and T. Anderson, "TCP Congestion Control with a Misbehaving Receiver", *ACM Computer Communications Review*, Vol. 29, No. 5, October 1999.

C. Lindblad, D. Wetherall, W. Stasior, J. Adam, H. Houh, M. Ismert, D. Bacher, B. Phillips and D. Tennenhouse, "ViewStation Applications: Implications for Network Traffic", *IEEE Journal on Selected Areas of Communications*, Vol. 13, No. 5, June 1995.

D. Tennenhouse, J. Adam, D. Carver, H. Houh, M. Ismert, C. Lindblad, B. Stasior, D. Wetherall, D. Bacher, and T. Chang, "The ViewStation: A Software-Oriented Approach to Media Processing and Distribution", Multimedia Systems Journal, Vol. 3, No. 3, July 1995.

Refereed Conferences

D. Wetherall, "Active network vision and reality: lessons from a capsule-based system", 17th SOSP, December 1999. (Acceptance rate 21%)

V. Bose, D. Wetherall and J. Guttag, "Next Century Challenges: RadioActive Networks", MOBICOM'99, Seattle, August 1999. (Acceptance rate 16%)

J. Santos and D. Wetherall, "Increasing Effective Link Bandwidth by Suppressing Replicated Data", USENIX'98, New Orleans, June 1998. (Acceptance rate 26%)

D. Wetherall, J. Guttag and D. Tennenhouse, "ANTS: A Toolkit for Building and Deploying Network Protocols", 1st IEEE Conference on Open Architectures and Network Programming, San Francisco, April 1998. (Acceptance rate 18%)

U. Legedza, D. Wetherall and J. Guttag, "Improving the Performance of Distributed Applications Using Active Networks", IEEE INFOCOM'98, San Francisco, April 1998. (Acceptance rate 22%)

D. Wetherall and D. Tennenhouse, "The ACTIVE IP Option", 7th SIGOPS European Workshop, Ireland, September 1996.

D. Tennenhouse and D. Wetherall, "Towards an Active Network Architecture", Multimedia Computing and Networking, San Jose, January 1996. A revised version of this paper appeared in *ACM Computer Communication Review*, Vol. 26, No. 2, April 1996.

D. Wetherall and C. Lindblad, "Extending Tcl for Dynamic Object-Oriented Programming", 3rd Tcl/Tk Workshop, Toronto, July 1995.

C. Lindblad, D. Wetherall and D. Tennenhouse, "The VuSystem: A Programming System for Visual Processing of Digital Video", ACM Multimedia, San Francisco, October 1994.

C. Lindblad, D. Wetherall, W. Stasior, B. Phillips, D. Bacher, J. Adam, H. Houh, M. Ismert and D. Tennenhouse, "ViewStation Applications: Intelligent Video Processing over a Broadband Local Area Network", USENIX Symposium on High-Speed Networking, Oakland, August 1994.

D. Tennenhouse, J. Adam, D. Carver, H. Houh, M. Ismert, C. Lindblad, B. Stasior, D. Wetherall, D. Bacher, and T. Chang, "A Software-Oriented Approach to the Design of Media Processing Environments", IEEE International Conference on Multimedia Computing and Systems, Boston, May 1994.

D. Wetherall, C. Lindblad and H. Houh, "Active Pages: Intelligent Nodes on the World Wide Web", 1st World Wide Web Conference, Geneva, May 1994.

Magazine Articles

D. Wetherall, J. Guttag and D. Tennenhouse, "ANTS: Network Services Without the Red Tape", *IEEE Computer*, Vol. 32, No. 4, April 1999.

D. Wetherall, U. Legedza and J. Guttag, "Introducing New Internet Services: Why and How", *IEEE Network Special Issue on Active and Programmable Networks*, July 1998.

D. Tennenhouse, J. Smith, D. Sincoskie, D. Wetherall and G. Minden, "A Survey of Active Network Research", *IEEE Communications*, Vol. 35, No. 1, January 1997.

Awards & Honors

Hackett Fellowship awarded for graduate study. 1991-94.

Grants

PI, DARPA Active Networks Program grant, $1.2M over three years. Jan 2000.

Professional Service

Program Co-chair, 4th IEEE OPENARCH, 2001.
Program Committee member, ACM SIGCOMM 2000 and 1999.
Program Committee member, 1st IEEE Workshop on Internet Applications, 1999.

Personal

Australian citizen.